COAL/OIL GASIFICATION
SITE STUDY
REGION X

TDD R10-8405-03

ecology and environment, inc.
International Specialists in the Environment

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TDD R10-8405-03

Report Prepared by: Ecology & Environment, Inc.
Project Manager: William Richards
Report Date: November 1986

Submitted To: J.E. Osborn, Regional Project Officer
Field Operations and Technical Support Branch
U.S. Environmental Protection Agency
Region X
Seattle, Washington

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International Specialists in the Environmental Sciences

MEMORANDUM

DATE: April 9, 1986

TO: Dave Buecker

FROM: Louis Craig

SUBJ: Status Report on TDD R10-8405-03

CC: Pat Storm, USEPA
Tom Tobin, E&E
Bill Ritthaler, E&E
Rich Fullner, E&E
Bill Richards, E&E

This TDD requires preparation of a list describing coal and oil gasification plants which have existed in Region X and their location, past and current ownership, and current use. The attached table lists the current status of information by city.

Remaining tasks include finding historical location maps (primarily for Oregon), researching past and present ownership, and determining current use for most of the sites. The most time consuming task is title searches for past and present ownership, which is done county by county and therefore requires travel. Most title companies are reluctant to do the more extensive searches as required by this TDD. It is anticipated, though, that the time allotted for ownership searches on the attached schedule can be reduced somewhat by title companies who would conduct these searches. Approximate costs are $35 per hour with 1-4 hours possible per site.

The primary source for finding the historical site location maps for Oregon is the Kerr Library at Oregon State University, Corvallis, Oregon. A trip to Oregon is therefore anticipated.

Time requirements for researching current usage are not specifically included in the schedule since that information will probably be collected while completing other tasks.

The attached schedule assumes that one person will be committed to the project essentially full-time for the duration. Delays in the expected due date can be expected if other projects are assigned.

LC:jkb
Attachment

TABLE 1

STATUS OF INFORMATION COLLECTED FOR
TDD R10-8405-03

ALASKA (0)

No Plants

IDAHO (4)	PROCESS	YEARS IN OPERATION	HISTORICAL LOCATION MAP	OWNERSHIP (past & current)	CURRENT USE
Boise	coal	30	Yes	No	No
Lewiston	carbureted water gas	30	Yes	No	No
Idaho Falls	coal gas and blue water gas	5?	No	No	No
Pocatello	coal, carbureted water gas	25	Yes	No	No
OREGON (10)					
Astoria	crude oil, oil gas	41	No	No	No
Baker	coal, coal gas (horizontal)	27	No	No	No
Eugene/Springfield	Lowe, carbureted water gas	39	No	No	No
Grants Pass	oil/carbureted water gas	23	No	No	No
Marsh Field	oil gas	27	No	No	No
Medford	oil/carbureted water gas	20	No	No	No
Pendleton	coal	27	No	No	No
Portland	crude oil/oil gas	46	No	No	No
Roseburg	oil	23	No	No	No
Salem	coal	16	No	No	No
WASHINGTON (14)					
Aberdeen	coal/water gas	30	Yes	No	No
Bellingham	coal/carbureted water gas	36	Yes	No	No
Bremerton	carbureted water gas	26	No	No	No
Centralia	coal/water gas	39	Yes	No	No
Everett	coal/water gas	42	Yes	No	No
Longview	carbureted water gas	18	No	No	No
Olympia	Emergency oil gas plant	?	Yes	No	No
Port Townsend	coal	28	Yes	No	No
Spokane	coal/water gas	43	Yes	No	No
Tacoma	coal/water gas	43	Yes	No	No
Vancouver	oil	3	Yes	No	No
Walla Walla	carbureted water gas	40	No	No	No
Yakima	coal	39	Yes	No	No
Seattle	----	--	Yes	--	--
Chehalis	----	--	No	--	--

PROJECT MANAGEMENT PLAN
TDD R10-8405-03

TASK DESCRIPTION	START	STOP	HOURS	ESTIMATED NO. OF SITES	REMARKS
1. Locate Historic Maps of Oregon	4/21/86	4/24/86	32	10	Travel to O.S.U.
2. Research Ownership/ Current Use - Oregon	4/21/86	5/02/86	48	10	County by County Travel
3. Locate Historic Maps of Washington	3/31/86	4/02/86	24	4	
4. Research Ownership/ Current Use - Washington	4/02/86	4/18/86	96	14	County by County Travel
5. Locate Historic Maps of Idaho	5/05/86	5/08/86	32	1	Travel to Idaho
6. Research Ownership Current Use - Idaho	5/05/86	5/16/86	48	4	County by County Travel
7. Draft Report	5/17/86	5/27/86	56		Requires Drafting, Word Processing - Estimated 2-3 PP Narrative Plus Tables, Figures
8. Peer Review	5/27/86	5/30/86	8		2-3 PP Narrative Plus Tables, Figures
9. Production/Delivery	6/02/86	6/06/86	16		
10. Project Closeout	6/05/86	6/06/86	16		PER, AOC, File Closeout

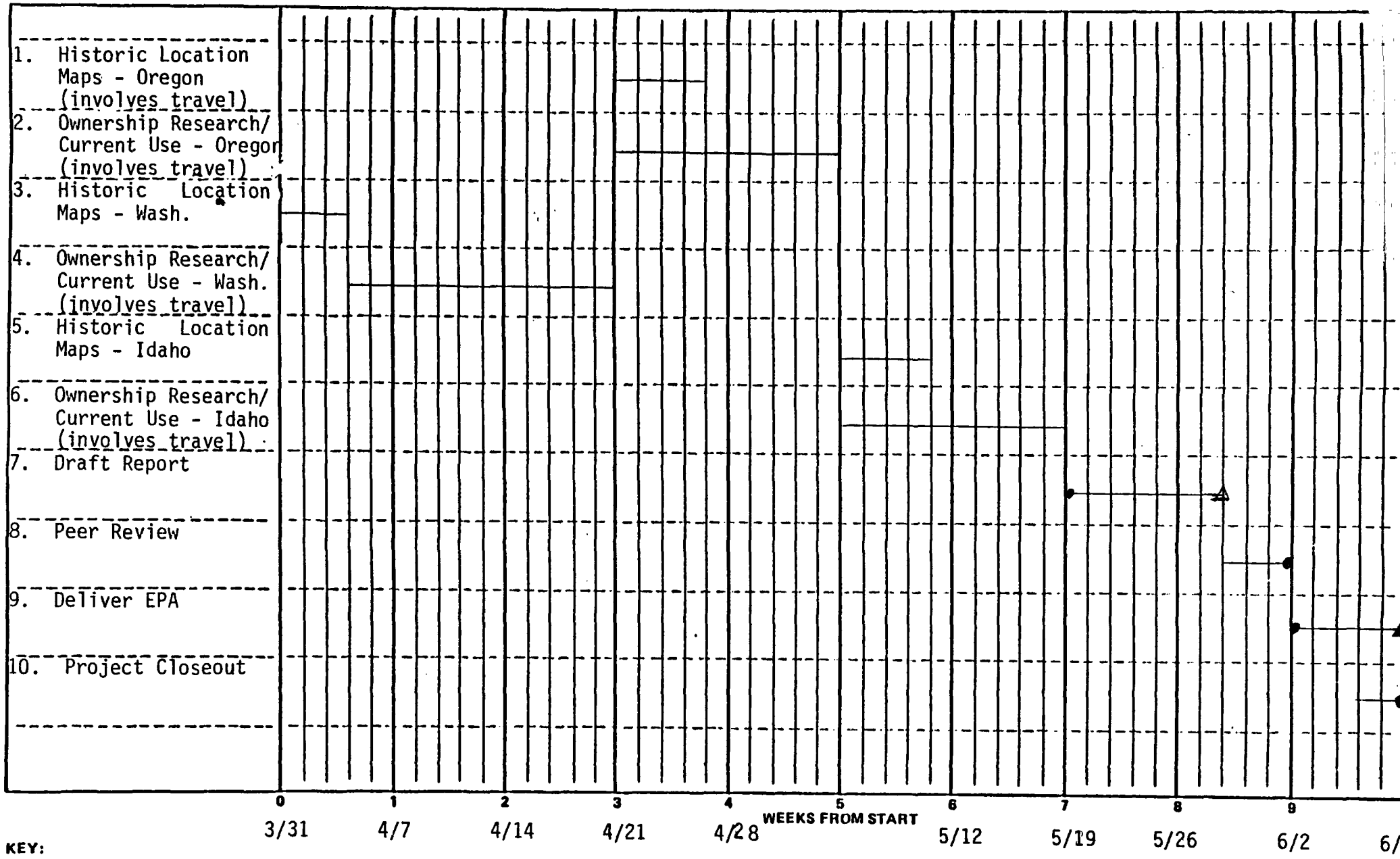

Figure 1 PROJECT SCHEDULE TDD R10-8405-03

(This figure shows WEEKS, with five-day divisions)

ecology and environment, inc.
108 SOUTH WASHINGTON, SUITE 302, SEATTLE, WASHINGTON 98104, TEL. 206-624-9537
International Specialists in the Environmental Sciences

MEMORANDUM

DATE: July 5, 1984

TO: Dave Buecker

FROM: Jim Pitts

SUBJ: Status Report on TDD R10-8405-03

This TDD requires gathering all information on all coal and oil gasification plants which have existed in Region 10, preparing a list of coal/oil gasification sites with location, past and current ownership and current use of all plants.

The following is a list of cities that have had oil or coal gasification plants. The exact location, past and current ownership, and current use of these plants has not been determined.

Alaska (0)
No plants

Idaho (4)

City	Process	Years in Operation
Boise	Coal	30+
Lewistown	Carbureted water gas	30+
Idaho Falls	Coal gas and blue water gas	5?
Pocatello	Coal, carbureted water gas	25
Oregon (10)		
Astoria	Crude oil, oil gas	41+
Baker (city)	Coal, coal gas (horizontal)	27+
Eugene/Springfield	Lowe, carbureted water gas	39
Grants Pass	Oil/carbureted water gas	23
Marsh Field	Oil gas	27+
Medford	Oil/carbureted water gas	20
Pendleton	Coal	27
Portland	Crude oil/oil gas	46+
Roseburg	Oil	23
Salem	Coal	16+

Washington (14)

City	Process	Years in Operation
Aberdeen	Coal/water gas	30+
Bellingham	Coal/carbureted water gas	36+
Bremerton	Carbureted water gas	26+
Centralia/Chehalis	Coal/water gas	39+
Everett	Coal/water gas	42+
Longview	Carbureted water gas	18
Olympia	Emergency oil gas plant	?
Port Townsend	Coal	28+
Spokane	Coal/water gas	43+
Tacoma	Coal/water gas	43+
Vancouver	Oil	3+
Walla Walla	Carbureted water gas	40
Yakima	Coal	39+

Available data goes back to 1910. The years in operation cited are only a rough estimate. Some cities may have more than one site which will be determined during further investigation.

\+ indicates plants that were in existance in 1910

? indicates poor data

JP:pc

ABSTRACT

Pursuant to U.S. Environmental Protection Agency (EPA) Contract No. 68-01-6629 and Technical Directive Document (TDD) No. R10-8405-03, Ecology and Environment, Inc. (E&E) conducted a preliminary characterization of facilities that manufactured gas from fossil fuels in EPA Region X between approximately 1890 and 1950. The work is part of an ongoing study by the EPA to investigate the fate and potential environmental impact of by-products from the manufactured gas industry.

The location, ownership, current property use, processing methods, and by-product information of 27 sites are presented in this report. Compiled data were obtained primarily from published gas statistics, historical maps, local governmental agencies, and ownership searches performed by contacting local title companies.

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1.0 INTRODUCTION

1.1 Background

Gas manufactured from fossil fuels for heating and lighting purposes (town gas) was widely used in the U.S. prior to the availability of natural gas. When interstate pipelines were constructed for natural gas distribution in the 1950s, manufactured gas plants rapidly became obsolete. Contaminated by-products from the gas manufacturing processes were, however, frequently disposed of on-site. Consequently, these sites represent potential sources of environmental contamination.

Town gas was typically manufactured by one of three primary processes: 1) carbonization of coal to produce coal gas, 2) coal gasification to form water gas, and 3) oil gasification to form oil gas. Prior to 1900, the predominant gas manufacturing process was carbonization. Carbonization involves the treatment of coal or coke in high temperature ovens or retorts in the absence of oxygen. The gas formed in the ovens was then purified (by the removal of tar and ammonia), cooled, and stored in gas holding tanks.

After 1900, coal and oil gasification processes became popular. Coal gasification, which produced water gas, was achieved by passing steam over incandescent coke in ovens or retorts. Air was periodically introduced into the coke bed in order to combust the coke at a controlled temperature. The gas formed in the ovens was then purified (by the removal of primarily tar, coke, and ammonia) and stored in gas holding tanks. Carbureted water gas was made by introducing hot steam into a coal gasification oven.

Oil gasification was achieved by the thermal cracking of oil, accomplished by spraying oil onto a hot oven brickwork or catalyst bed. The oil gas was then purified (by the removal of primarily oil derivatives, tar, and naphthalenes), and stored in gas holding tanks. Scrubbers, for the removal of sulfur and nitrogen impurities were often utilized at gas manufacturing plants (2, 3).

Tars generated by gas plants were often reclaimed and sold for refining into useful products. Occasionally, tars were disposed of at the plant, or left on-site during plant demolition. The plants that operated prior to 1900 are more likely to have considered by-product tars as wastes, rather than reclaimable materials, since the tar refining industry in the U.S. was minor prior to the turn of the century. The tars were comprised primarily of polyaromatic hydrocarbons.

Spent oxides were generated by the removal of certain impurities in the gas scrubbers. These wastes typically contained high levels of ammonia, cyanide, and sulfur compounds. Ash and cinders from the gas producing ovens contained traces of heavy metals, and were occasionally disposed of on-site (3).

Thirty-five town gas manufacturing sites were initially identified by E&E in EPA Region X. Eight sites were eliminated from further characterization on the basis of negligible gas or by-product generation, relatively short time period of plant operation, lack of data pertaining to location or ownership, or a combination of these factors.

1.2 Purpose

The objectives of this study were to:

- determine, as precisely as possible, the locations of all manufactured gas plants that existed in EPA Region X;
- identify ownership history and current use of the plant properties; and
- provide as much data as possible concerning waste production and disposal activities at each site with available time and information.

2.0 INVESTIGATIVE METHODOLOGY

2.1 Overview

Gas manufacturing sites were initially located using published gas statistics. Historical maps identifying specific locations of the plants were then used to delineate the property on current road maps. Upon identification of a specific site location, a title company in the vicinity of the site was contracted to perform ownership research on the affected property. Current property uses and historical by-product generation were determined following location and ownership identification.

2.2 Published Data Sources

Brown's Directory of American Gas Companies (Brown's) was the primary source of published gas statistics used in this study. Brown's was used to initially locate gas plant sites, identify gas company names, and gas manufacturing process types. Brown's also supplied all by-product data used in this study. Information from Brown's was available only for irregular yearly intervals, and not before 1910. In addition, by-product data was not reported in Brown's until 1918. Editions of Brown's used in this study included: 1910, 1913, 1914, 1919, 1922, 1926, 1929, 1932, 1933, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1944-45, 1945-46, 1948-49, 1949-50, 1950-51, 1951-52, 1952-53, 1954-55, 1955-56, 1958, 1959. Each edition of Brown's contained information and data for the preceding year.

Sanborn Fire Insurance Maps were used to identify specific historical locations of gas plants within each city, and also to confirm names and locations derived from Brown's. Locations of gas holding tanks, tar cookers, gas reactors, and coal storage areas were transferred to current plat maps from the Sanborn maps. Sanborn maps were made at irregular yearly intervals, and were collected only for the specific operational years of identified plants. Sanborn maps were obtained from state universities, county historical societies, and local museums.

An EPA research and technical document, "Survey of Town Gas and By-Product Locations in the U.S. (1880-1950)" was used to supplement information from Brown's. Current city road maps were used to find street names and addresses. In some cities, old newspaper articles describing plant operations or business transactions were available, and used to further characterize plant sites.

2.3 Other Data Sources

Title companies were contracted to perform ownership searches on specific pieces of property identified as having been affected by gas manufacturing activities. Utilization of one title company to perform the necessary research on a regional basis was not possible. Local title companies were contracted at an average cost of $90.00 per site. Ownership information received from the title companies included most deed transactions, owner names, legal property descriptions, and plat maps. Listed deed transactions in this study include only major ownership changes. Easements,

leases, and property rentals are not included as part of this report, although some sites' chain-of-title documents include leases and easements. These documents are included with the deeds for each city in Attachment 1.

Gas companies, local museums, and county assessors were often able to provide additional information. These sources were used in some cases to obtain plat maps, location information, and current property uses.

2.4 Sources of Error

A significant amount of information is still unknown about many gas manufacturing sites. Incomplete chain-of-title records and corporate name changes complicated ownership documentation, and in some cases, best estimates were made to fill informational gaps. Additionally most title companies had access to records dating only to 1900 or later. Although an attempt was made to research all areas that would have been affected by the town gas industry, it was frequently difficult to determine specific pieces of property that may have been affected by gas manufacturing wastes.

Brown's often did not list all of the gas companies that operated at a particular site. A single entry in Brown's was occasionally reported for a plant or company that utilized multiple sites. Reported production and by-product accuracy is questionable because methods of calculating these statistics were not consistent among gas plants, and by-product entries in Brown's for several plants were exactly the same for consecutive years. Production and by-product averages are presented to provide relative comparisons between gas plant sites and should not be used in an absolute sense.

2.5 Elimination of Sites

Some sites originally identified as having manufactured town gas were eliminated from further study. Sites were eliminated on the basis of a short time period of plant operation (less than five years), negligible gas or by-product generation (less than 50,000 cubic feet of gas per year), lack of data pertaining to location or ownership, or a combination of these factors. Of the 35 sites originally identified in this study, eight were eliminated from further consideration using the above criteria.

2.6 Presentation of Maps

Maps used in this report were obtained from a variety of sources, and the quality of some is less than optimal. Photo-copies were often the only type of map copy available, especially the Sanborn maps. Because of the age of the master Sanborn maps, some of the copies included in this report are difficult to read. Some of the Sanborn maps collected for the state of Washington were of such poor quality that sketches were the only reproducible map form. Tax maps and plat maps sent from the title companies were also only available as photocopies. The maps gathered are presented in order of increasing detail for each site in Appendices A, B, and C.

3.0 RESULTS

This section presents all of the information obtained for each gas manufacturing site. The sites are organized by state and city. Eliminated sites in each state are presented at the beginning of each subsection, followed by descriptions of the gas manufacturing plants located in each city.

A summary of the number of town gas manufacturing sites identified in Region X and included in this study is presented in Table 3.1. Further characterization of five of the 37 sites studied is recommended for reasons outlined in Section 4.0

TABLE 3.1

SUMMARY OF TOWN GAS MANUFACTURING SITES
IN EPA REGION X

State	No. of Sites Identified	No. Characterized In This Report	Estimated Years of Operation	No. of Sites Recommended for Additional Study
Alaska	0	0	NA	NA
Idaho	4	3	1910-1944	0
Oregon	13	10	1864-1956	1
Washington	18	14	1881-1956	4
TOTAL	35	27	1864-1956	5

3.1 State of Alaska

There were no gas manufacturing sites identified in the State of Alaska.

3.2 State of Idaho

Four gas manufacturing sites were identified in the State of Idaho. Gas was manufactured in the State before 1910 (Lewiston) until 1944 (Boise). One site was eliminated from further characterization (Idaho Falls). Table 3.2.1 summarizes town gas manufacturing activities in Idaho.

3.2.1 Sites Eliminated in Idaho

IDAHO FALLS:

Brown's reports the Eastern Idaho Gas Company as operating a gas manufacturing facility in Idaho Falls from 1925 to 1928. In 1918, Brown's reported that the Eastern Idaho Gas Company project in Idaho Falls was abandoned. It is unclear if gas was manufactured at this site, or if the site was merely a distribution plant.

This site was eliminated from further study because location information could not be obtained, and, if the plant did manufacture gas, production took place for a relatively short time period.

TABLE 3.2.1

SUMMARY OF TOWN GAS MANUFACTURING SITES IN IDAHO

City	No. of Sites	Years of Operation	Production Methods	By-Products	Location
Boise	1	1910-1944	Coal Retort	Coke, tar	T3N, R23, S 10
Lewiston	1	pre 1910-1929	Coal Gas/Carbureted Water Gas	Coke, tar	T36N, R5W, S 32
Pocatello	1	1912-1938	Coal Gas/Carbureted Water Gas	Coke, tar	T62, R34E, S 27
TOTAL	3				

3.2.2 Manufacturing Sites in Idaho

BOISE:

The gas manufacturing site in Boise was located in Section 10, Township 3 North, Range 2 East of the Boise Meridian, located on Lots 3-14, Block 5 of the Davis Addition to Boise. The site is presently located on Battery Street, between Eighth and Ninth Streets (see Appendix A, Figure 1).

Coal retort gas was produced between 1910 and 1944. Purifying facilities and gas holding tanks were located on the north end of the property. Retorts and coal storage were located on the southern edge of the property (see Appendix A, Figure 2). Average reported by-product generation between 1921 and 1928 was 2,625 tons of coke per year and 47,721 gallons of tar per year. Approximately 70% of the coke and 99% of the tar was re-sold (see Table 3.2.2.1).

TABLE 3.2.2.1

BOISE GAS MANUFACTURING SITE
BOISE, IDAHO

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: 1910-1944
AVERAGE BY-PRODUCT GENERATION: 2,625 tons coke/yr.
47,721 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1921-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Boise Gas and Light Co.	1910	Lots 3-14, Block 5
Boise Gas Light and Coke	1912	Lots 3-14, Block 5
Bradley Mining Company	1944	Lots 3-14, Block 5
Bank of Idaho	1969	Lots 3-14, Block 5
Boise Wholesale Dry Goods	1971	Lots 3-14, Block 5
Shaver's, Inc.	1983	Lots 3-14, Block 5

CURRENT USE: Retail offices and warehouse.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Boise River.

LEWISTON:

The gas manufacturing site in Lewiston was located in Section 32, Township 36 North, Range 5 West of the Boise Meridian, between Main Street and the Clearwater River, just north of the terminus of 21st street. This area of Lewiston is not platted. The legal description is complicated and is not described here (see Attachment 1, Lewiston deeds). Coal gas was produced from before 1910 until 1929.

Coke was stored on the northern portion of the property next to the river. Gas holding tanks were located along the eastern part of the property (see Appendix A, Figure 4). Average reported by-product generation between 1921 and 1928 was 1,511 tons of coke per year and 21,930 gallons of tar per year (see Table 3.2.2.2) (1).

TABLE 3.2.2.2

LEWISTON GAS MANUFACTURING SITE
LEWISTON, IDAHO

MANUFACTURING PROCESS: Coal retort gas and carbureted water gas
TOTAL OPERATING PERIOD: pre-1910-1939
AVERAGE BY-PRODUCT GENERATION: 1,511 tons coke/yr.
21,930 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1921-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Columbia Power and Light Co. Controlled by Northwestern Corporation	19??	All described property*
Pacific Power and Light Co.	1910	All described property
Northwest Cities Gas Co.	1929	All described property
Fred M. Viles Co., Inc.	19??	All described property
Hans Supply, Inc.	1957	All described property

CURRENT USE: Plumbing retail facility.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Clearwater River and railroad mainline.

*Property boundaries and legal description as described in deeds; presented in Attachment 1.

POCATELLO:

The gas manufacturing site in Pocatello was located in Section 27, Township 6 South, Range 34 East, on Lots 1-10, and 16-20, Block 386 of the Town of Pocatello. The site is presently located south of Gould Street, between First Avenue and the Northern Pacific Railroad (see Appendix A, Figure 5).

Coal gas was manufactured from 1912 until 1938. Carbureted water gas was also made during the 1920s and 1930s. The main processing and coal storage areas were housed on lots 18-20. A tar holder was located on Lot 17. Average reported by-product generation between 1921 and 1928 was 1,925 tons of coke per year and 38,421 gallons of tar per year. Approximately 37% of the coke and 99% of the tar was resold. Average annual gas production between 1921 and 1938 was approximately 46,500,000 cubic feet (see Table 3.2.2.3) (1).

TABLE 3.2.2.3

POCATELLO GAS MANUFACTURING SITE
POCATELLO, IDAHO

MANUFACTURING PROCESS: Coal retort gas and carbureted water gas
TOTAL OPERATING PERIOD: 1912-1938
AVERAGE BY-PRODUCT GENERATION: 1,925 tons coke/yr.
38,421 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1921-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Pocatello Gas and Power Co.	1911	Lots 1-3, Block 386
Pocatello Gas and Power Co.	1912	Lots 4-5, 16-20, Block 386
Pocatello Gas and Power Co.	1913	Lots 6-10, Block 386
Citizen's Utilities Co.	1936	Lots 1-10, 16-20, Block 386
O.P. Wright	1951	Lots 8-13, Block 386
Shaw Auto Parts	1960	Lots 14-20, Block 386
Associated Development Co.	1963	Lots 8-13, Block 386
Shaw Auto Parts	1967	Lots 8-13, Block 386

CURRENT USE: Auto parts retail facility.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Union Pacific Railroad.

3.3 State of Oregon

Thirteen gas manufacturing sites were initially identified in the State of Oregon. Gas was manufactured in the State from 1864 until 1956 (Portland). Three sites were eliminated from further characterization as explained below. Table 3.3.1 summarizes town gas manufacturing activities in Oregon.

3.3.1 Sites Eliminated in Oregon

ASHLAND

Brown's reports that the Oregon Gas and Electric Company operated a gas manufacturing facility in Ashland from 1912 to 1931. Further research of gas production records revealed that all gas used in Ashland was supplied from Medford, Oregon Gas and Electric's main regional manufacturing plant.

This site was eliminated from further study because it was apparently used for distribution of gas. Sanborn maps made between 1912 and 1931 did not show a gas manufacturing plant located in or near Ashland.

EAST PORTLAND

Portland Gas and Coke Company supplied East Portland with gas under high pressure. The East Portland site was used for distribution purposes and was eliminated from further study because documentation of gas manufacturing activity and location information could not be obtained.

ST. JOHNS

Portland Gas and Coke Company supplied St. Johns with gas under high pressure. As with the East Portland site, St. John's site was used for distribution purposes only. It was eliminated from further study because documentation of gas manufacturing activity and location information could not be obtained.

TABLE 3.3.1

SUMMARY OF TOWN GAS MANUFACTURING SITES IN OREGON

City	No. of Sites	Years of Operation	Production Methods	By-Products	Location
Astoria	1	1919-1934	Oil	Not reported	T8N, R9W, S 18
Baker	1	pre 1900-1938	Coal retort	Coke, tar	T9S, R40E, S 16
Eugene	1	1909-1929	Carbureted water	Not reported	T17S, R3W, S 32
Grants Pass	1	1913-1931	Oil	Not reported	T36S, R5W
Medford	1	1913-1935	Coal/carbureted water	Not reported	T38S, R1W, S 9
Northbend/ Marshfield	1	1893-1938	Coal/oil retort	Not reported	T25S, R13W
Pendleton	1	1913-1939	Oil	Coke, tar	T32E, R2N, S 11
Portland	1	1864-1956	Coal retort/cabureted water/ oil	Coke, tar, sulfur oils, creosote	T1N, R1E, S 34
Roseburg	1	1911-1932	Oil	Not reported	T27S, R5E, S 19
Salem	1	1903-1938	Coal retort	Coke, tar	T7S, R3W, S 22
TOTAL	10				

3.3.2 Manufacturing Sites in Oregon

ASTORIA

The original gas plant in Astoria was located near the Columbia River, near the City's business center. It was operated by the Astoria Gas and Electric Company for about five years between 1914 and 1919 (see Appendix B, Figure 2). In 1919, the plant was relocated by Pacific Power and Light to Section 18, Township 8 North, Range 9 West. The legal description is complicated and is not included here (see Appendix B, Figure 1 and Attachment 1, Astoria Deeds).

Oil gas was manufactured from 1919 until 1939 when all gas was supplied from Walla Walla. Production and by-product data were not reported in Brown's (see Table 3.3.2.1). This site is still owned by the gas company that last manufacutured gas on the property, Pacific Power and Light Company.

TABLE 3.3.2.1

ASTORIA GAS MANUFACTURING SITE
ASTORIA, OREGON

MANUFACTURING PROCESS: Oil gas
TOTAL OPERATING PERIOD: 1919-1939
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Pacific Power and Light Co.	1919	Uplands of described property
Pacific Power and Light Co.	1919	Shorelands of described prop.
Northwest Cities Gas Co.	1929	All described property
Pacific Power and Light Co.	1950	All described property

CURRENT USE: Storage of vehicles and buildings used by Pacific Power and and Light Co.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near Young's Bay and railroad mainline.

BAKER:

The gas manufacturing site in Baker was located in Section 16, Township 9 South, Range 40 East, on Block B of Fisher's Addition to Baker. The site is presently located between Washington and Valley Avenues, just east of the terminus of Court Avenue (see Appendix B, Figures 3 and 4).

Coal gas was manufactured from before 1900 to 1937. The plant converted to butane-air gas in 1938. Retorts were located on the central portion of the property and coal storage was located on the eastern side (see Appendix B, Map Figure 5). Average reported by-product generation between 1918 and 1936 was 350 tons of coke per year and 6,574 gallons of tar per year. Approximately 60% of the coke and 73% of the tar was resold. Average annual gas production was 634,000 cubic feet (see Table 3.3.2.2) (1).

TABLE 3.3.2.2

BAKER GAS MANUFACTURING SITE
BAKER, OREGON

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: pre-1900-1938
AVERAGE BY-PRODUCT GENERATION: 350 tons coke/yr.
6,574 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1918-1936

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Baker City Gas and Electric Co.	18??	Section of Block B
Baker Gas and Electric Co.	1900	Section of Block B
Raye Nye	1909	Section of Block B
Elkhorn Light and Power Co.	1909	Section of Block B
Eastern Oregon Light and Power Co.	1909	Section of Block B
Eastern Oregon Light and Power Co.	1923	Additional Section of Block B
California-Pacific Utilities Corporation	1946	All described property
Sidney Johnson	1973	All described property

CURRENT USE: General contractor's storage yard.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Powder River.

EUGENE:

The gas manufacturing site in Eugene was located in Section 32, Township 17 South, Range 3 West on part of Block 8 and all of Block 15. The legal description of the property is complicated and is not included here (see Attachment 1, Eugene Deeds). The site is presently located between Franklin Avenue and the Willamette River, near the eastern terminus of Eighth Avenue (see Appendix B, Figure 6).

Carbureted water gas was produced at this plant until 1929. By-product information was not reported in Brown's. Average annual production averaged approximately 52,400,000 cubic feet (see Table 3.3.2.3) (1).

TABLE 3.3.2.3

EUGENE GAS MANUFACTURING SITE
EUGENE, OREGON

MANUFACTURING PROCESS: Carbureted water gas
TOTAL OPERATING PERIOD: 1909-1929
AVERAGE BY-PRODUCT GENERATION: Not reported.

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Northwestern Corp.	1909	North 1/2 Lot 8, Block 15
Tri-State Railway and Power Co.	1910	North 1/2 Lot 8, Block 15
Northern Idaho and Montana Power Co.	1910	North 1/2 Lot 8, Block 15
Mountain States Power Co.	1918	North 1/2 Lot 8, Block 15
Northwest Cities Gas Co.	1929	North 1/2 Lot 8, Block 15
Cascade Natural Gas Co.	19??	All described property
Portland Gas and Coke	1958	All described property
Northwest Natural Gas Co.	1959	All described property
Hindquarter Corp.	19??	All described property
Eugene Water and Electric Board	1976	All described property

CURRENT USE: Water and electric utilities storage yard.

LOCATION CHARACTERISTICS: Urban, commercial-industrial land use. Located near the Willamette River and the Southern Pacific Railroad tracks.

GRANTS PASS:

The gas manufacturing site in Grants Pass was located in Township 36 South, Range 5 West, on East "J" Street, just east of Skunk Creek (see Appendix B, Figure 8). The legal description is complicated and is not included here (see Attachment 1, Grants Pass Deeds).

Oil gas was produced from approximately 1913 until 1931 when all gas was supplied from Medford. An oil storage tank was located in the southeast corner of the property; scrubbers and the generator house were located in the northeast part of the property (see Appendix B, Figure 9). By-product and production data was not reported in Brown's (see Table 3.3.2.4).

TABLE 3.3.2.4

GRANTS PASS GAS MANUFACTURING SITE
GRANTS PASS, OREGON

MANUFACTURING PROCESS: Oil gas
TOTAL OPERATING PERIOD: 1913-1931
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
G.B. Barrows	1909	All described property
Oregon Gas and Electric Co.	1920	All described property
Southern Oregon Gas Corp.	1929	All described property
Vangas, Inc.	1977	All described property

CURRENT USE: Vangas operations yard.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near Skunk Creek and railroad mainline.

MEDFORD:

The gas manufacturing site in Medford was located in Section 9, Township 38 South, Range 1 West, approximately 2.5 miles south of the Medford City Center along the Southern Pacific Railroad tracks (see Appendix B, Figure 11). The legal description is complicated and is not included here (see Attachment 1, Medford Deeds).

Oil gas was produced from approximately 1913 until 1935 when the plant was converted to butane-air gas production. Carbureted water gas was also made from 1929 until 1935. A coal storage shed and retort/purifier house were located along the railroad tracks on the western edge of the property (see Appendix B, Figure 12). By-product data was not reported in Brown's. Annual gas production between 1925 and 1935 was 40,446,000 cubic feet (1) (see Table 3.3.2.5).

TABLE 3.3.2.5

MEDFORD GAS MANUFACTURING SITE
MEDFORD, OREGON

MANUFACTURING PROCESS: Oil gas and carbureted water gas
TOTAL OPERATING PERIOD: 1913-1935
AVERAGE GAS PRODUCTION: 40,446,000 cubic feet/year
YEARS AVERAGED FOR GAS PRODUCTION DATA: 1925-1935

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
L. Sutter (OG & E Co.)	1921	All described property
Southern Oregon Gas Co.	1922	All described property
C.H. Loveland	1928	All described property
Southern Oregon Gas Co.	1928	All described property
California-Pacific Corp.	19??	All described property
R.H. Taylor	1944	All described property

See deeds for further chain of title

CURRENT USE: Surrounding land use is low density residential areas and agricultural land. Specific use of the property is unknown due to the number of subdivisions of the original property.

LOCATION CHARACTERISTICS: Urban, located near the Southern Pacific Railroad mainline.

NORTH BEND/MARSHFIELD:

The North Bend/Marshfield gas manufacturing site was located in what is now Coos Bay. The site was listed in Brown's under both North Bend and Marshfield. It is located in Township 25 South, Range 13 West on Lots 5, 7, and 8 in Block F of the Western Addition to Marshfield. The site is presently located on Central Avenue, between Eighth and Ninth Streets (see Appendix B, Figure 12).

Oil gas was manufactured from 1910 until 1938. Prior to 1910, coal gas was probably manufactured at this site. By-product data was not reported in Brown's. Average annual gas production between 1918 and 1936 was 10,800,000 cubic feet per year (see Table 3.3.2.6 and Appendix B, Figure 13) (1).

TABLE 3.3.2.6

NORTH BEND/MARSHFIELD GAS MANUFACTURING SITE
COOS BAY, OREGON

MANUFACTURING PROCESS: Coal retort gas and oil gas
TOTAL OPERATING PERIOD: 1893-1938
AVERAGE GAS PRODUCTION: 10,800,000 cubic feet/yr.
YEARS AVERAGED FOR GAS PRODUCTION DATA: 1918-1936

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Marshfield Electric and Gas Co.	1893	Lot 7, Block F
Marshfield Electric and Gas Co.	1897	Lots 5, 8, Block F
F.M. and L.G. Friedburg	1901	Lots 5-8, Block F
C.L. Mackenzie	1904	Lots 5-8, Block F
Drews, Hewitt, Bell	1905	Lots 5-8, Block F
Coos Bay Gas and Electric Co.	1906	Lots 5-8, Block F
Northern Idaho and Montana Power Co.	1910	Lots 5-8, Block F
Mountain States Power Co.	1918	Lots 5-8, Block F
Pacific Power and Light Co.	19??	Lots 5-8, Block F
N.M. Harris	1959	Lots 5-8, Block F
H.B. Building Corp.	1967	Lots 5-8, Block F
Nevis Industries, Inc.	1979	Lots 5-8, Block F
Block Brothers Industries	1979	Lots 7, 8, Block F
D. Westcott	1984	Lots 5-6, Block F

CURRENT USE: Vacant land.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Southern Pacific Railroad tracks.

PENDLETON:

The gas manufacturing site in Pendleton was located in Section 11, Township 32 East, Range 2 North, on Lots 3, 4, 5, and 6 of Block I in the Original Plat of Pendleton and Lots 7, 8, 9, and 10 of Block I in the Reservation Addition to Pendleton. The site is currently located between Southeast Third and Fourth Streets, just south of the Northern Pacific Railroad tracks (see Appendix B, Figure 14).

Oil gas was manufacutured at the Pendleton site from 1913 until 1939. The southern portion of the property housed coal storage areas, gas holder tanks, and the main gas manufacturing reactors (see Appendix B, Figure 15). Average reported annual by-product generation between 1921 and 1928 was 1,326 tons of coke per year, and 20,920 gallons of tar per year (see Table 3.3.2.7).

TABLE 3.3.2.7

PENDLETON GAS MANUFACTURING SITE
PENDELETON, OREGON

MANUFACTURING PROCESS: Oil gas
TOTAL OPERATING PERIOD: 1913-1939
AVERAGE BY-PRODUCT GENERATION: 1,326 tons coke/year
20,920 gallons tar/year
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1921-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Pacific Power & Light Co.	1928	Lots 3-10, Block I
Zimmerman Properties	1961	Lots 3-10, Block I
Cascade Natural Gas Co.	1961	Lots 3-10, Block I
D.M. Swenson & R.E. Hart	1984	Lots 3-10, Block I

CURRENT USE: Retail and office space. Partly vacant.

LOCATION CHARACTERISTICS: Urban, commercial land. Located near the Northern Pacific Railroad tracks.

PORTLAND:

The gas manufacturing site in Portland was located in Section 34, Township 1 North, Range 1 East on Blocks 5, 6, 15, and 23 of Couch's Addition to Portland. The site is presently located on Front Avenue, between Everett and Glisan Streets (see Appendix B, Figure 16).

Coal and carbureted water gas were produced from 1864 to 1918. Oil gas was produced from 1918 until 1956. Locations of gas production facilities, structures, and equipment changed significantly over time (see Appendix B, Figures 17-19). Average reported by-product generation between 1921 and 1950 was 65,646 tons of carbon briquets and lampblack per year, 243,000 gallons of tar per year, 2,670,000 gallons of light oils per year, 9,731 tons of coke per year, 1,060,000 gallons of creosote per year, and 147 tons of sulfur containing wastes per year (see Table 3.3.2.8) (1).

TABLE 3.3.2.8

PORTLAND GAS MANUFACTURING SITE
PORTLAND, OREGON

MANUFACTURING PROCESS: Coal retort gas, carbureted water gas, and oil gas
TOTAL OPERATING PERIOD: 1864-1956
AVERAGE BY-PRODUCT GENERATION: 9,731 tons coke/yr.
65,646 tons carbon and lampblack/yr.
147 tons sulfur wastes/yr.
243,000 gals. tar/yr.
2,670,000 gals. light oils/yr.
1,060,000 gals. creosote/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1921-1950

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Portland Gas Light Co.	1864	Block 5
Portland Gas Light Co.	1867	Block 6
Portland Gas Co.	1893	Blocks 5, 6
Portland Gas Co.	1904	Blocks 7, 15
Portland Gas and Coke Co.	1910	Blocks 5-7, 15, 23
City of Portland	1942	Block 5
City of Portland	1946	Block 6
Northwest Natural Gas Co.	1961	Lots 1-4, Block 15

CURRENT USE: Block 5 is occupied by a city park, Block 6 is occupied by roads, Block 15 is a parking lot, and Block 23 currently houses an office building.

LOCATION CHARACTERISTICS: Urban, commercial land, partly public, partly vacant. Located near the Willamette River.

ROSEBURG:

The gas manufacturing site in Roseburg was located in Section 19, Township 27 South, Range 5 West, on Lots 6, 7, and 8 of the Second Railroad Addition to Roseburg. The site is presently located between the South Umpqua River and Pine Street, just west of the terminus of Diamond Lake Boulevard.

Oil gas was produced from approximately 1911 until 1932 when all gas was supplied from Medford. Purifiers and an oil tank were located on Lots 7 and 8. Land bordering the river was mostly vacant at the time of plant operation (see Appendix B, Figure 20). By-product and production data was not reported in Brown's (see Table 3.3.2.9).

TABLE 3.3.2.9

ROSEBURG GAS MANUFACTURING SITE
ROSEBURG, OREGON

MANUFACTURING PROCESS: Oil gas
TOTAL OPERATING PERIOD: 1911-1932
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Oregon Gas and Electric Co.	1911	Lots 6-8, 2nd RR Add.
L. Sutter	1921	Lots 6-8, 2nd RR Add.
Southern Oregon Gas Co.	1922	Lots 6-8, 2nd RR Add.
C.H. Loveland	1928	Lots 6-8, 2nd RR Add.
Southern Oregon Gas Co.	1928	Lots 6-8, 2nd RR Add.
California-Pacific Corp.	19??	Lots 6-8, 2nd RR Add.

CURRENT USE: Industrial building.

LOCATION CHARACTERISTICS: Urban, commercial-industrial land use. Located near the S. Umpqua River and railroad mainline.

SALEM:

The gas manufacturing site in Salem was located in Section 22, Township 7 South, Range 3 West, on the western half of Lots 6, 7, and 8, Block 62 of the City of Salem. The site is presently located to the southwest of the intersection of Chemeketa and Water Streets (see Appendix B, Figure 21).

Coal gas was produced from 1903 until 1938 when all gas was supplied from Portland. Reactors, purifiers, and coke/tar storage areas were lcoated on the northern half of the property (see Appendix B, Figure 22). Average reported by-product generation between 1918 and 1928 was 1,361 tons of coke per year and 23,181 gallons of tar per year (see Table 3.3.2.10) (1).

TABLE 3.3.2.10

SALEM GAS MANUFACTURING SITE
SALEM, OREGON

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: 1903-1938
AVERAGE BY-PRODUCT GENERATION: 1,361 tons coke/yr.
23,181 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1918-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Citizen's Light and Traction Co.	1903	West 1/2 Lots 6-8, Block 62
Portland General Electric Co.	1906	West 1/2 Lots 6-8, Block 62
Portland Railway Light and Power Co.	1908	West 1/2 Lots 6-8, Block 62
Northwest Natural Gas Co.	19??	West 1/2 Lots 6-8, Block 62
Southern Pacific Co.	1963	West 1/2 Lots 6-8, Block 62
Greenleaf Co.	1970	West 1/2 Lots 6-8, Block 62
Salem Riverfront Development Project	1984	West 1/2 Lots 6-8, Block 62

CURRENT USE: Office building of Riverfront Development Project, with plans to develop property into parkland or hotel site.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Willamette River and railroad mainline.

3.4 State of Washington

Eighteen gas manufacturing sites were initially identified in the State of Washington. Gas was manufactured in the State from 1881 (Seattle) until 1956 (Everett). Four sites were eliminated from further characterization as described below. Table 3.4.1 summarizes town gas manufacturing activities in Washington.

3.4.1 Sites Eliminated in Washington

AUBURN:

The gas manufacturing facility located in Auburn was the only plant found to have manufactured wood gas. The Valley Gas Company operated the plant for at least one year in 1918. Records show that Auburn received all gas from Tacoma in subsequent years, and this plant was used primarily as a distribution facility.

The site is located at Second Street NW and "H" Street, just east of the Burlington Northern Railroad tracks. It was eliminated from further study because of a limited time period of gas manufacturing activity and due to little documentation concerning property boundaries or ownership. Additionally, the type of gas manufactured is not within the scope of this study.

CENTRALIA:

Evidence suggests that a gas manufacturing facility was located in Centralia prior to 1918. The location of the plant in Chehalis serving the two cities can be verified only as far back as 1918. If a plant did exist in Centralia, its location was not shown on any Sanborn map made for that city between 1900 and 1918.

This site was eliminated from further study because no historical map was found that delineated the site location, and the facility, if it existed, apparently operated for a limited period of time.

LONGVIEW:

Brown's reports that the Western Gas Company of Washington operated a gas facility in Longview from approximately 1931 to 1940. The few entries in Brown's that reported this information did not specify if the facility manufactured or distributed gas.

This site was eliminated from further study because no historical map made between 1930 and 1940 was found that delineated the plant location. Thus, it is assumed the facility was merely a distribution plant.

SPOKANE, PACIFIC AVENUE:

The Spokane Falls Gas Company operated a gas plant in downtown Spokane on Pacific Avenue from approximately 1890 to 1910. A second site in Spokane located on Erie Street, was operated for five years (1905-1910) by a different gas company.

The Pacific Avenue site is located on the north half of the block between second and Pacific Avenues, just south of the Northern Pacific Railroad tracks and is currently occupied by a parking lot. It was eliminated from further study because records of gas company ownership were not obtainable. Additionally, the Erie Street Spokane site produced more gas for a longer period of time. A Sanborn map of the Pacific Avenue site was found and included in Appendix C, Figure 38.

TABLE 3.4.1

SUMMARY OF TOWN GAS MANUFACTURING SITES IN WASHINGTON

City	No. of Sites	Years of Operation	Production Methods	By-Products	Location
Aberdeen	1	1911-1929	Coal retort/carbureted water	Coke, tar	T17N, R8W, S 8
Bellingham	1	1900-1948	Coal retort/carbureted water	Coke, tar	T38N, R2E, S 36
Bremerton	1	1931-1947	Carbureted water	Not reported	T24N, R1E, S 14
Chehalis	1	19??-1932	Coal retort	Coke, tar	T14N, R2E, S 29
Everett	1	1900-1956	Coal retort/carbureted water	Coke, tar	T29N, R5E, S 20
Olympia	1	1890-1956	Coal retort/oil	Not reported	T18N, R2W, S 14
Port Townsend	1	pre 1890-1924	Coal retort	Not reported	T30N, R1W, S 1
Seattle	1	1881-1904	Coal retort	Not reported	T24N, R4E, S 5
Spokane	1	1905-1948	Coal retort/carbureted water	Coke, tar	T25N, R43E, S 17
Tacoma	1	1880-1946	Coal retort/carbureted water/ oil	Coke, tar	T20N, R3E, S 9
Vancouver	1	1901-1925	Oil	Not reported	T2N, R1E, S 28
Walla Walla	1	pre 1903-1948	Coal retort	Coke, tar	T7N, R36E, S 20
Wenatchee	1	1913-1945	Coal retort/carbureted water	Not reported	T22N, R20E, S 10
Yakima	1	1906-1932	Coal retort	Coke, tar	T19E, R13N, S 25
TOTAL	14				

3.4.2 Manufacturing Sites in Washington

ABERDEEN:

The gas manufacturing site in Aberdeen was located in Section 8, Township 17 North, Range 8 West, on Block 41 of Weatherwax and Benn's Second Addition to Aberdeen. The site is presently located between South Michigan and Jefferson streets, just north of the Northern Pacific Railroad tracks (see Appendix C, Figures 1 and 2).

Coal gas and carbureted water gas were produced from 1911 until 1929. Lots 9-11 would probably have been most directly affected by gas reactors. Lots 7 and 8 were vacant, and could have been used for by-product storage (see Appendix C, Figure 3). Average reported by-product generation from 1918 to 1928 was 2,680 tons of coke per year, 62,705 gallons of tar per year. Approximately 22% of the coke and 97% of the tar was resold (see Table 3.4.2.1) (1).

TABLE 3.4.2.1

ABERDEEN GAS MANUFACTURING SITE
ABERDEEN, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas and carbureted water gas
TOTAL OPERATING PERIOD: 1911-1929
AVERAGE BY-PRODUCT GENERATION: 2,680 tons coke/yr.
62,705 gals. tar/yr.
YEARS AVERAGE FOR BY-PRODUCT GENERATION DATA: 1918-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Grays Harbor Gas Co.	1911	Lots 2-4, 7-11, Block 41
North Pacific Public Service Co.	1915	Lots 2-4, 7-11, Block 41
North Pacific Public Service Co.	1923	Lot 5, Block 41
Washington Gas and Electric Co.	1926	Lots 2-5, 7-11, Block 41
David Dietrich	1929	Lots 2-5, 7-11, Block 41
Coast Trucklines, Inc.	19??	Lots 2-5, 7-11, Block 41
Truck Terminals, Inc.	1973	Lots 1-10, Block 41
C. and E.G. Schreckengust	1981	Lots 1-10, Block 41

CURRENT USE: Commercial truck depots.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Chehalis River and the Northern Pacific Railroad tracks.

BELLINGHAM:

The gas manufacturing site in Bellingham was located in Section 36, Township 38 North, Range 2 East, on Lots 1-12, Block 83 of the original plat of Bellingham. The site is presently located between South State Street and the Burlington Northern Railroad tracks, just east of the terminus of Bayview Drive (see Appendix C, Figure 6).

Coal retort gas and carbureted water gas were produced from 1900 until 1948. The eastern portion of the property housed purifiers, retorts, and coal storage (see Appendix C, Figure 6). Average reported tar generation between 1918 and 1945 was 38,736 gallons per year (1). Coke generation and by-product re-sale data was not reported in Brown's (see Table 3.4.2.2).

TABLE 3.4.2.2

BELLINGHAM GAS MANUFACTURING SITE
BELLINGHAM, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas and carbureted water gas
TOTAL OPERATING PERIOD: 1900-1948
AVERAGE BY-PRODUCT GENERATION: 38,736 gals. tar/yr.
YEARS AVERAGED FOR TAR GENERATION DATA: 1918-1945

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Bellingham Bay Gas Co.	1900	Lots 1-5, Block 83
Bellingham Bay Gas Co.	1902	Lots 6-8, Block 83
Whatcom-Fairhaven Gas Co.	1902	Lots 1-6, East 1/2 7-8, Block 83
Whatcom County Railway and Light Co.	1903	Lots 1-6, 9-11, East 1/2 7-8 Block 83
Puget Sound Traction, Light, and Power Co.	1912	East 1/2 Lots 1-12, Block 83
Puget Sound Power and Light Co.	19??	East 1/2 Lots 1-12, Block 83
Bellingham Gas Co.	1946	Lots 1-12, Block 83
Puget Sound Power and Light Co.	1951	Lots 7-12, Block 83
E.G. Carlson	1962	Lots 1-12, Block 83
R. and C.W. Jones	1972	Lots 1-12, Block 83
City of Bellingham	1975	Lots 1-12, Block 83

CURRENT USE: City of Bellingham park (Boulevard Park).

LOCATION CHARACTERISTICS: Urban, public land. Located near Puget Sound and the northern Pacific Railroad tracks.

BREMERTON:

The gas manufacturing site in Bremerton was located in Section 14, Township 24 North, Range 1 East, on Lots 1-5, and 9-15 (currently Lots 1-5, and 9-11) of the Supplemental Bayview Garden Tracts of Bremerton. The site is presently located at the northern terminus of Thompson Avenue, on the waterfront of the Port Washington Narrows of Puget Sound (see Appendix C, Figure 7-9).

Carbureted water gas was manufactured from 1931 to approximately 1947. Current Lots 1 and 11 would have been most directly affected by gas manufacturing activities (see Appendix C, Figure 8). Production and by-product data were not reported in Brown's (see Table 3.4.2.3).

TABLE 3.4.2.3

BREMERTON GAS MANUFACTURING SITE
BREMERTON, WASHINGTON

MANUFACTURING PROCESS: Carbureted water gas
TOTAL OPERATING PERIOD: 1931-1947
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Western Gas and Utilities Co.	1930	Lots 1-5, 9-15, SBG Tracts
Western Gas Company of Washington	1931	Lots 1-5, 9-11, SBG Tracts (lots re-numbered)
H.D. and L.I. Lent and T.C. and M. Blomberg	1948	Lots 1-5, 9-11, SBG Tracts
Andor Distributing, Inc.	19??	Lot 9, SBG Tracts
Port Washington Prop.	19??	Lots 10-11, SBG Tracts

CURRENT USE: Lot 1 is services property for an apartment on lots 2-5. Lot 9 houses a petroleum distributor's buildings, and lots 10 and 11 are parking areas.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near Puget Sound.

CHEHALIS:

The gas manufacturing site in Chehalis was located in Section 29, Township 14 North, Range 2 East, just west of the intersection of National Avenue and Coal Creek Road (see Appendix C, Figures 10 and 11). This area of Chehalis is not platted, and the property description is not included here (see Attachment 1, Chehalis Deeds).

Coal gas was produced from around 1918 until 1932. Exact property boundaries were hard to determine, although reactors and coal storage areas appear to have been located on the southern end of the property (see Appendix C, Figure 12). Average reported by-product generation between 1918 and 1928 was 1,657 tons of coke per year and 24,755 gallons of tar per year. Approximately 38% of the coke and 94% of the tar was resold (see Table 3.4.2.4) (1).

TABLE 3.4.2.4

CHEHALIS GAS MANUFACTURING SITE
CHEHALIS, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: 19??-1932
AVERAGE BY-PRODUCT GENERATION: 1,657 tons coke/yr.
24,755 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1918-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
North Pacific Public Service Company	19??	All described property
Washington gas and Electric Co.	1929	All described property
The Woodproducts Corp.	19??	All described property
Washington Natural Gas Co.	1957	All described property

CURRENT USE: Utilities office and yard.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Burlington Northern Railroad tracks.

EVERETT:

The gas manufacturing site in Everett was located in Section 20, Township 29 North, Range 5 East, on Lots 15 through 29, Block A, and all of Block B, of Rucker's Second Plat of Everett. The site is presently located along Railway Avenue, just north of the State Highway 2 bridge connecting with Interstate 5 (see Appendix C, Figure 13 and 19).

Coal retort gas was produced from 1901 until 1913, when the plant was converted to produce carbureted water gas. Carbureted water gas was produced until 1956. Lots 19-24 would have been most directly affected by gas manufacturing activities (see Appendix C, Figure 15). Average reported tar generation between 1918 and 1925 was 73,100 gallons per year (see Table 3.4.2.5) (1).

TABLE 3.4.2.5

EVERETT GAS MANUFACTURING SITE
EVERETT, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas and carbureted water gas
TOTAL OPERATING PERIOD: 1900-1956
AVERAGE BY-PRODUCT GENERATION: 47,721 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION: 1918-1925

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Bellingham Bay Gas Co.	1900	Unknown
Northwest Light and Power Co.	1901	Lots 22-29, Block A, Block B
Everett Gas Co.	1910	Lots 22-29, Block A, Block B
Puget Sound Gas Co.	1917	West 1/2 Lots 15-21, Block A Lots 22-29 Block A, Block B
Mountain States Power Co.	1923	Same property as above
Washington Gas and Electric Co.	1928	Lots 15-29, Block A, Block B
Washington Natural Gas Co.	1956	Lots 15-29, Block A, Block B

CURRENT USE: Maintenance shops operated by Washington Natural Gas.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Snohomish River and the Northern Pacific Railroad tracks.

OLYMPIA:

The gas manufacturing site in Olympia was located in Section 14, Township 18 North, Range 2 West, on Lots 1 and 4, Block 2 of Sylvester's Plat of Olympia. The site is presently located on the southeast corner of the intersection of Thurston and Columbia Avenues (see Appendix C, Figures 16 and 17).

The plant manufactured coal and oil gas on a regular basis until 1913. After 1913, the plant was used as a standby emergency oil gasification plant. The eastern half of Lot 1 housed gas manufacturing facilities and oil storage tanks (see Appendix C, Figure 18). By-products could have been stored on adjacent Lot 2, which was vacant at the time of plant operation. Production and by-product information were not reported in Brown's (see Table 3.4.2.6).

TABLE 3.4.2.6

OLYMPIA GAS MANUFACTURING SITE
OLYMPIA, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas and oil gas
TOTAL OPERATING PERIOD: 1890-1956
AVERAGE BY-PRODUCT GENERATION: Not Reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Olympia Gas and Electric Co.	1890	Lots 1, 4, Block 2
Olympia Gas and Fuel Co.	1907	Lots 1, 4, Block 2
Tacoma Gas and Fuel Co.	1918	Lots 1, 4, Block 2
Mountain States Power Co.	1923	Lots 1, 4, Block 2
Washington Gas and Electric Co.	1928	Lots 1, 4, Block 2
Washington Natural Gas Co.	1956	Lots 1, 4, Block 2
Columbia Square Properties	1974	Lots 1, 4, Block 2
Safeco Title Insurance Co.	1978	Lots 1, 4, Block 2

CURRENT USE: Small office building and parking area.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near Puget Sound and the Burlington Northern Railroad tracks.

PORT TOWNSEND:

The gas manufacturing site in Port Townsend was located in Section 1, Township 30 North, Range 1 West, on Lots 1-6, Block 100 of the Original Plat of Port Townsend. The site is presently located on the east corner of the intersection of Clay and Monroe Streets (see Appendix C, Figures 19 and 20).

Coal gas was produced from before 1890 until approximately 1924. Lots 2 and 4 housed gas manufacturing facilities (see Appendix C, Figure 21). Production and by-product information was not reported in Brown's.

TABLE 3.4.2.7

PORT TOWNSEND GAS MANUFACTURING SITE
PORT TOWNSEND, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: pre-1890-1924
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Port Townsend Gas Works	1890	Lots 1-6, Block 100
Citizen's Electric Co.	1910	Lots 1-6, Block 100
Key City Light and Power Co.	1910	Lots 1-6, Block 100
Washington Coast Utilities	1919	Lots 1-6, Block 100
Puget Sound Power and Light Co.	1924	Lots 1-6, Block 100
P.J. Pederson	1974	Lots 1-6, Block 100
J.A. Pederson and P. Rogers	1982	Lots 1-6, Block 100

CURRENT USE: Residential duplex and house.

LOCATION CHARACTERISTICS: Suburban, private dwellings. Located near Puget Sound.

SEATTLE:

The "Gasworks Park" gas manufacturing facility produced most of Seattle's gas after the turn of the century. The Gasworks Park facility is excluded from this study. A gas plant built by Dexter Horton and David Denny in 1881 (4) was located in Section 5, Township 24 North, Range 4 East, on Blocks 27 and 28 of Maynard's Plat of Seattle. The site is presently located between Main and King Streets, along Sixth Avenue South (see Appendix C, Figure 22).

Coal gas was produced at this plant from 1881 until 1904. Lots 1 and 8 of Block 27 housed purifying facilities; coal and coke storage areas were located on Lots 5, 6, 7, and of Block 27 (see Appendix C, Figure 23). By-product and production data were not reported in Brown's (see Table 3.4.2.8).

TABLE 3.4.2.8

SEATTLE GAS MANUFACTURING SITE
SEATTLE, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: 1881-1904
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Seattle Gas Light Co.	1881	Lots 5, 6, Block 28
Seattle Gas Light Co.	1882	Lots 3, 4, Block 28
Seattle Gas and Electric Light and Motor Corp.	1890	Lots 1-8, Block 28
Seattle Gas and Electric Light and Motor Corp.	1898	Lots 1-8, Block 27
Seattle Lighting Co.	1904	Lots 1-8, Block 27 Lots 3-6, Block 28
Washington Northern Railway	1906	Same property as above
D. and H. Replin	19??	Same property as above
A.R. Thomas	1955	Same property as above
J. Greenbach	1965	Same property as above
4th Ave. S. Joint Venture	1970	Same property as above

CURRENT USE: Block 27 houses an abandoned railroad station. Lots 5-8 of Block 28 are occupied by abandoned railroad grades. Lots 1-4 of Block 28 are occupied by an office building.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near railroad mainline and Puget Sound.

SPOKANE:

The larger gas manufacturing site in Spokane (see eliminated sites in Washington) was located in Section 17, Township 25 North, Range 43 East, on Tract B of Dennis and Bradley's Addition to Spokane. The site is presently located across from the intersection of Erie Street, and now-vacated Bradley Street (see Appendix C, Figure 24).

Coal retort gas and carbureted water gas were produced between 1905 until 1948. Gas holding tanks were located on the northeast corner of the tract (see Appendix C, Figure 25). Average reported by-product generation between 1918 and 1945 was 15,944 tons of coke per year and 198,811 gallons of tar per year. Approximately 45% of the coke and 99% of the tar was resold. Reported annual gas production averaged 336,000,000 cubic feet per year (see Table 3.4.2.9) (1).

TABLE 3.4.2.9

SPOKANE GAS MANUFACTURING SITE
SPOKANE, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas and carbureted water gas
TOTAL OPERATING PERIOD: 1905-1948
AVERAGE BY-PRODUCT GENERATION: 15,944 tons coke/yr.
198,811 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1918-1945

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Union Gas Co.	1905	Tract B, N. section
Spokane Gas and Fuel Co.	1910	Tract B, N. section
Spokane Gas and Fuel Co.	1928	Tract B, S. section
Washington Water Power	19??	Tract B, all sections
R.E. and N.E. Brown	1978	Tract B, N. section

CURRENT USE: Building supply and timber yard.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Spokane River and railroad mainline.

TACOMA:

The gas manufacturing site in Tacoma was located in Section 9, Township 20 North, Range 3 East, on Block 2201 of the Tacoma Land Company's Second Addition to Tacoma. The site is presently located north of 23rd street, between "A" and Dock Streets (see Appendix C, Figures 26 and 27).

This plant supplied and distributed gas throughout the Puget Sound area during the 1920s and 1930s. Coal retort gas was produced between 1880 and 1921, oil gas from 1918 to approximately 1921, and carbureted water gas from 1880 and 1932. A gas holding tank and purifiers were located on Lots 1-5 (see Appendix C, Figure 28). Average reported by-product generation between 1918 and 1936 was 3,596 tons of coke per year and 352,556 gallons of tar per year. Approximately 19% of the coke and 87% of the tar was resold (see Table 3.4.2.10) (1).

TABLE 3.4.2.10

TACOMA GAS MANUFACTURING SITE
TACOMA, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas, carbureted water gas, and oil gas
TOTAL OPERATING PERIOD: 1880-1946
AVERAGE BY-PRODUCT GENERATION: 3,596 tons coke/yr.
352,556 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1918-1936

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Tacoma Light and Water Co.	1893	Lots 1-12 Block 2201
Tacoma Gas Light and Electric Co.	1895	Lots 1-12 Block 2201
Pierce County Gas Co.	1906	Lots 1-12 Block 2201
Tacoma Gas Light Co.	1906	Lots 1-12 Block 2201
Tacoma Gas Co.	1910	Lots 1-12 Block 2201
Mountain States Power Co.	1923	Lots 1-12, Block 2201
Washington Water Power	1928	Lots 1-12, Block 2201
Terminal Investment Co.	1946	Lots 1-12, Block 2201
Home Electric Co.	1953	Lots 1-12, Block 2201
Washington Floral Services	1964	Lots 1-12, Block 2201
State of Washington, Dept. of Transportation	1983	Lots 1-12, Block 2201

CURRENT USE: Vacant land.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Tacoma City Waterway of Puget Sound and railroad mainline.

VANCOUVER:

The gas manufacturing site in Vancouver was located in Section 28, Township 2 North, Range 1 East, on Lots 1 and 2, Block 4 of the Waverley Addition to Vancouver. The site is presently located at the southeast corner of the intersection of Ninth and Lincoln Streets (see Appendix C, Figures 29 and 30).

Oil gas was produced between 1906 and 1925 when all gas was supplied from Portland. Lot 2 housed gas holding tanks, the southern half of Lot 1 contained a crude oil tank (see Appendix C, Figure 31). After 1925 all gas was purchased from Portland. Production and by-product information was not reported in Brown's.

TABLE 3.4.2.11

VANCOUVER GAS MANUFACTURING SITE
VANCOUVER, WASHINGTON

MANUFACTURING PROCESS: Oil gas
TOTAL OPERATING PERIOD: 1901-1925
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Independent Light and Water Co.	1906	Lots 1-2, Block 4
Vancouver Gas Co.	1912	Lots 1-2, Block 4
Pacific Power and Light Co.	1913	Lots 1-2, Block 4
Portland Gas and Coke Co.	1925	Lots 1-2, Block 4
California Packing Co.	1939	Lots 1-2, Block 4
Burlington Northern Railroad Co.	1941	Lots 1-2, Block 4

CURRENT USE: Railroad main and spur tracks. Partly vacated.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Columbia River and railroad mainline.

WALLA WALLA:

The gas manufacturing site in Walla Walla was located in Section 20, Township 7 North, Range 36 East, on Lots 5-7, Block D of Walla Walla. A 180 square feet parcel of land across Sixth Avenue was also used. The site is presently located on Rose Avenue, at the intersection of Sixth Avenue (see Appendix C, Figure 35).

Coal retort gas was produced from prior to 1903 until 1948 when the plant converted to produce butane-air gas. Gas manufacturing structure locations are unknown because a Sanborn map for this site was not found. Average reported by-product generation between 1922-1945 was 7,241 tons of coke per year and 135,139 gallons of tar per year. Approximately 60% of the coke was resold. Reported annual gas production averaged 213,000,000 cubic feet per year (see Table 3.4.2.12) (1).

TABLE 3.4.2.12

WALLA WALLA GAS MANUFACTURING SITE
WALLA WALLA, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: pre-1903-1948
AVERAGE BY-PRODUCT GENERATION: 7,241 tons coke/yr.
135,139 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1921-1945

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Walla Walla Gas and Electric Co.	????	Lots 5-7, Block D
Northwestern Gas and Electric Co.	1903	Lots 5-7, Block D
Northwestern Corp.	1909	Lots 5-7, Block D
Columbia Power and Light Co.	1910	Lots 5-7, Block D
Pacific Power and Light Co.	1910	Lots 5-7, Block D
Northwest Cities Gas Co.	1929	Lots 5-7, Block D
Cascade Natural Gas Co.	19??	Lots 5-7, Block D

CURRENT USE: Vacant land.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near Mill Creek.

WENATCHEE:

The gas manufacturing site in Wenatchee was located in Section 10, Township 22 North, Range 20 East, on Lots 1-9, Block 3 of the Amended Manufacturer's Addition to Wenatchee. The site is presently located between the Columbia River and the Burlington Northern Railroad tracks, just north of Chehalis Street (see Appendix C, Figures 32 and 33).

Coal gas was produced between 1913 and 1930, and carbureted water gas was produced until 1945. An oil tank was located on Lot 2 (see Appendix C, Figure 34). By-product information was not reported in Brown's. Reported annual gas production averaged 43,000,000 cubic feet per year (see Table 3.4.2.13) (1).

TABLE 3.4.2.13

WENATCHEE GAS MANUFACTURING SITE
WENATCHEE, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas and carbureted water gas
TOTAL OPERATING PERIOD: 1913-1945
AVERAGE BY-PRODUCT GENERATION: Not reported

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Central Washington Gas Co.	1913	Lots 1-5, Block 3
Wenatchee Valley Gas and Electric Co.	1920	Lot 6, Block 3
Washington Coast Utilities	1922	Lots 1-5, Block 3
Washington Coast Utilities	1922	Lots 7-9, Block 3
Puget Sound Power and Light Co.	1924	Lots 7-9, Block 3
Puget Sound Power and Light Co.	1925	Lots 1-6, Block 3
Wenatchee Gas Co.	1946	Lots 1-4, Block 3
Chelan County Public Utilities Dept.	1968	Lots 1-4, 8, Block 3

CURRENT USE: Electric transformer station.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Columbia River and railroad mainline.

YAKIMA:

The gas manufacturing site in Yakima was located in Section 25, Township 19 East, Range 13 North, between the Burlington Northern and Northern Pacific Railroad tracks, just west of the terminus of Race Street. This area of Yakima is not platted. The property is designated as Yakima County Tax Parcel No. 191330-22001 (see Appendix C, Figure 36).

Coal retort gas was produced from 1906 until 1932. Coke piles were located on the southern portion of the property. Retorts and purifiers were located on the eastern part of the property (see Appendix C, Figure 37). Average reported by-product generation between 1921 and 1928 was 4,452 tons of coke per year and 66,721 gallons of tar per year. Approximately 63% of the coke was re-sold (see Table 3.4.2.14) (1). This site is still owned by the gas company that last manufactured gas on the property, Northwest Cities Gas Company.

TABLE 3.4.2.14

YAKIMA GAS MANUFACTURING SITE
YAKIMA, WASHINGTON

MANUFACTURING PROCESS: Coal retort gas
TOTAL OPERATING PERIOD: 1906-1932
AVERAGE BY-PRODUCT GENERATION: 4,452 tons coke/yr.
66,721 gals. tar/yr.
YEARS AVERAGED FOR BY-PRODUCT GENERATION DATA: 1921-1928

OWNERSHIP HISTORY	DATE ACQUIRED	PROPERTY
Yakima Gas Co.	1906	All described property
Northwestern Corp.	1909	All described property
Yakima-Pasco Power Co.	1910	All described property
Pacific Power and Light Co.	19??	All described property
Northwest Cities Gas Co.	1929	All described property

CURRENT USE: Partly vacant, and partly occupied by railroad tracks. Property could include parts of the Del Monte Cannery.

LOCATION CHARACTERISTICS: Urban, commercial land use. Located near the Burlington Northern and Northern Pacific Railroad tracks.

4.0 CONCLUSIONS/RECOMMENDATIONS

Most of the gas manufacturing sites studied in this report were located in areas of similar land use. Approximately 93% (25 sites) were located on what is now industrial and/or commercially zoned land. Two sites were located in what is now public land (parks), and seven sites are currently vacant or partly vacant. One site (Port Townsend, WA) is currently occupied by private homes. Twenty one sites (78%) were located adjacent to railroad main or spur tracks. Fifteen sites (56%) were located on rivers or streams, and six sites (22%) are located on or near marine environments (see Table 4.0).

TABLE 4.0

LAND USE

SITE	NEAR OR ON RAILROAD RIGHT-OF-WAY	COMMERCIAL ZONE	PUBLIC LAND	VACANT LAND
Boise		X		
Lewiston	X	X		
Pocatello	X	X		
Astoria	X	X		
Baker		X		
Eugene	X	X		
Grants Pass	X	X		
Medford	X	X		
North Bend/ Marshfield	X	X		X
Pendleton	X	X		X
Portland		X	X	X
Roseburg	X	X		
Salem	X	X		
Aberdeen	X	X		
Bellingham	X		X	
Bremerton		X		
Chehalis	X	X		
Everett	X	X		
Olympia	X	X		
Port Townsend				
Seattle	X	X		
Spokane	X	X		
Tacoma	X	X		X
Vancouver	X	X		X
Walla Walla		X		X
Wenatchee	X	X		X
Yakima	X	X		
TOTAL	21	25	2	7

Some of these sites warrant further investigation, either because a potential for human exposure to on site by-products exists (e.g., the property is currently vacant or public land), or because significant amounts of by-products may remain on site. It is recommended that the sites in Table 4.1 be further researched and characterized:

TABLE 4.1

SITES RECOMMENDED FOR FURTHER CHARACTERIZATION

SITE	RATIONALE
Portland, OR	Presently partly vacant land and high local population density Partly public land Large by-product volumes (average 1921-50, 243,000 gal.tar/yr.) Pre-1900 operation Long overall period of gas manufacturing activity
Port Townsend, WA	Presently residentially used land Pre-1900 operation
Spokane, WA	Large by-product volumes (average 1918-45, 198,800 gal.tar/yr.) Long overall period of gas manufacturing activity
Tacoma, WA	Presently vacant land and high local population density Large by-product volumes (average 1918-36, 352,500 gal.tar/yr.) Pre-1900 operation Long overall period of gas manufacturing activity
Walla Walla, WA	Presently vacant land and high local population density Pre-1900 operation Long overall period of gas manufacturing activity

REFERENCES

1. Brown's Directory of American Gas Companies. Moore Publishing Company, Inc. N.Y. 1910, 1913, 1914, 1919, 1922, 1926, 1929, 1932, 1933, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1944-45, 1945-46, 1948-49, 1949-50, 1950-51, 1951-52, 1954-55, 1955-56, 1958, 1959 editions.

2. Eng, Robert Survey of Town Gas and By-Products and Locations in the U.S. (1880-1950) Feb. 1985 EPA-600/7-85-004

3. Environmental Research and Technology, Inc. and Kopper's Company, Inc. Handbook on Manufactured Gas Plant Sites Sept. 1984 ERT # P-D125

4. Hadley, Jane Fourteen State Sites are Added to the Superfund Hazardous List May 3, 1984 Seattle Post Intelligencer, pg. A6

APPENDIX A

IDAHO GASIFICATION SITE MAPS

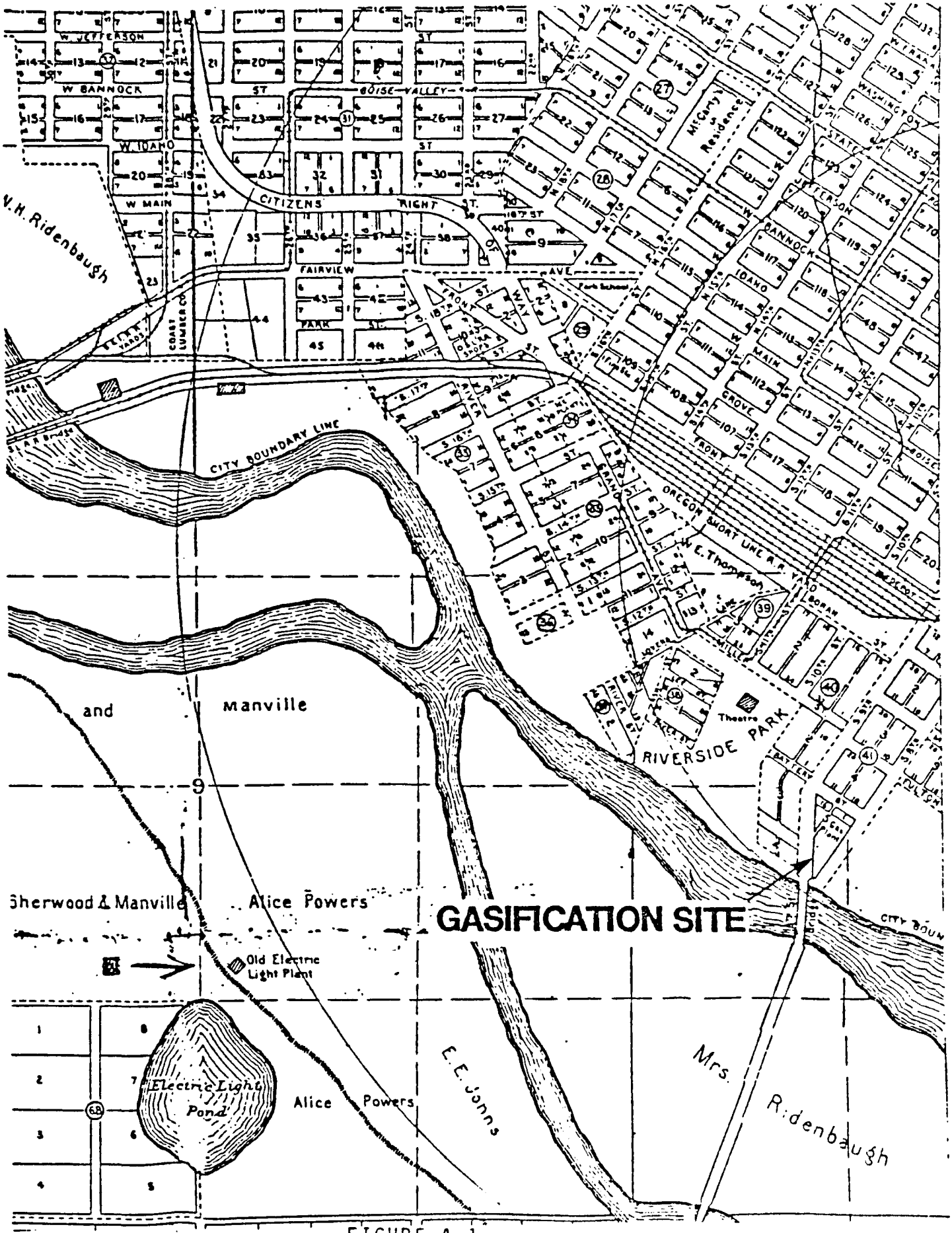

FIGURE A-1
BOISE GAS & LIGHT COMPANY
Boise, Idaho
Idaho Historical Society Historical Map, 1907
Scale Unknown

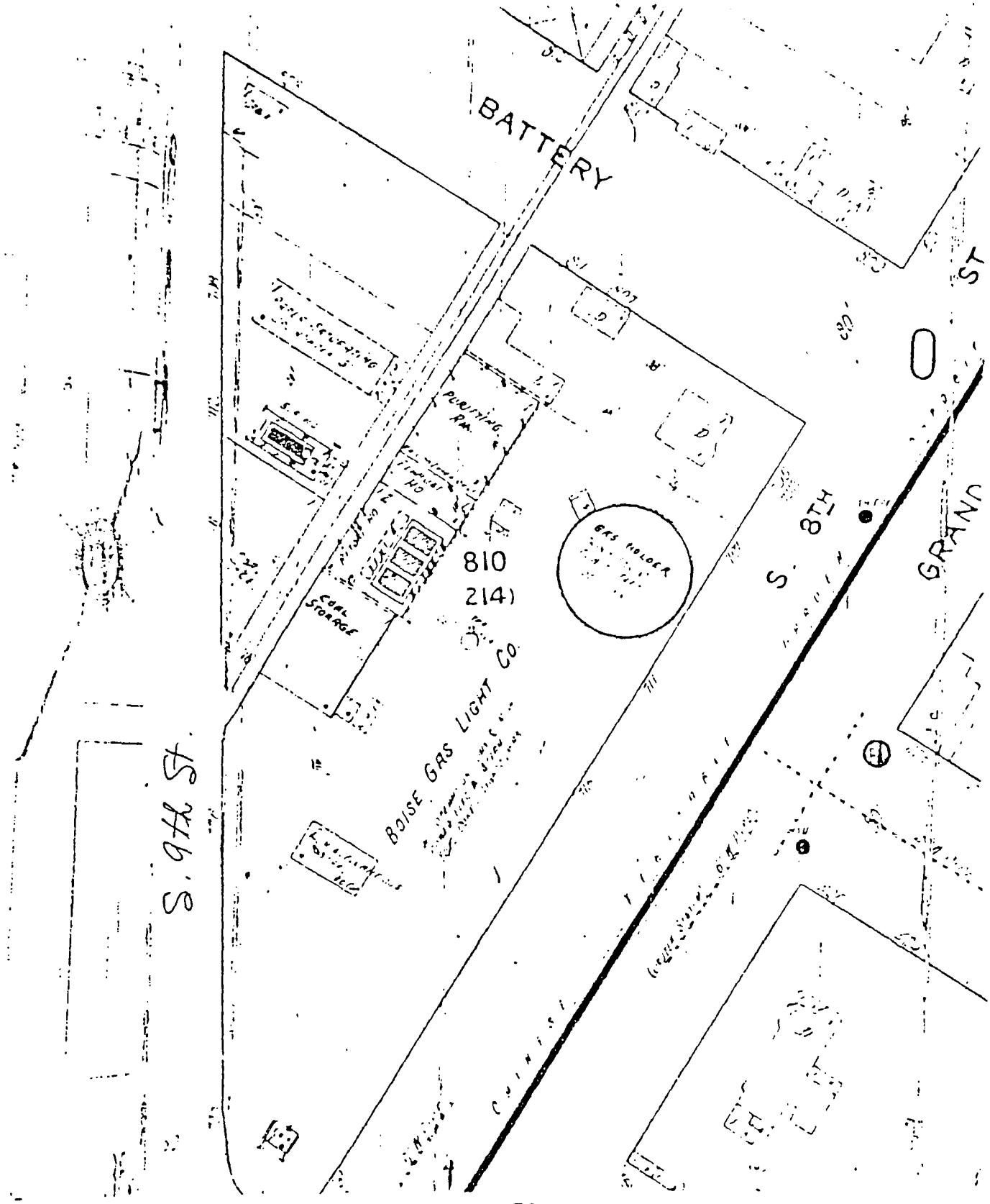

FIGURE A-2
BOISE GAS AND LIGHT COMPANY
Boise, Idaho
Sanborn Fire Insurance Map, 1912
Scale Unknown

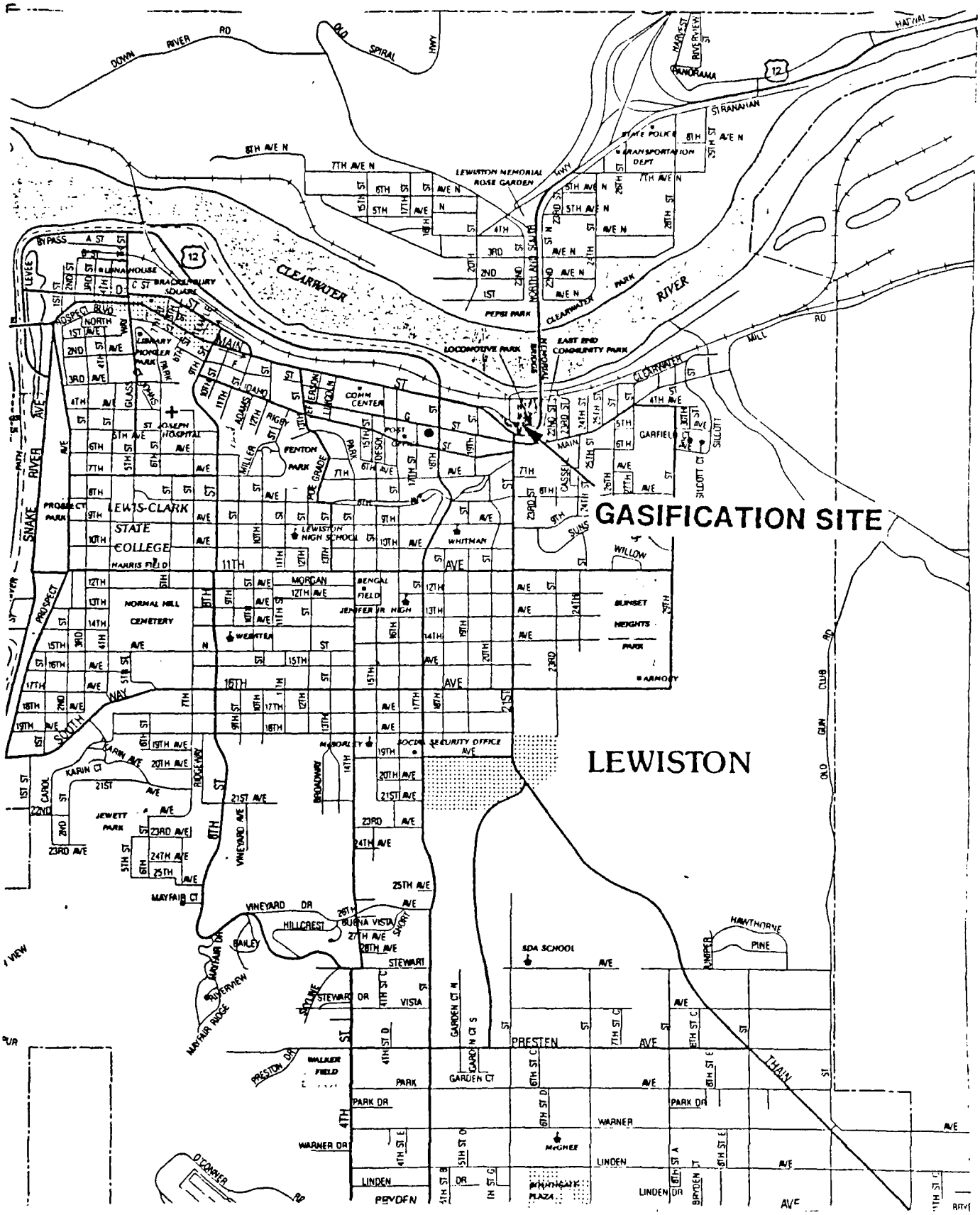

FIGURE A-3
LEWISTON GAS MANUFACTURING SITE
Lewiston, Idaho
Scale: 1 mile = 3.5"

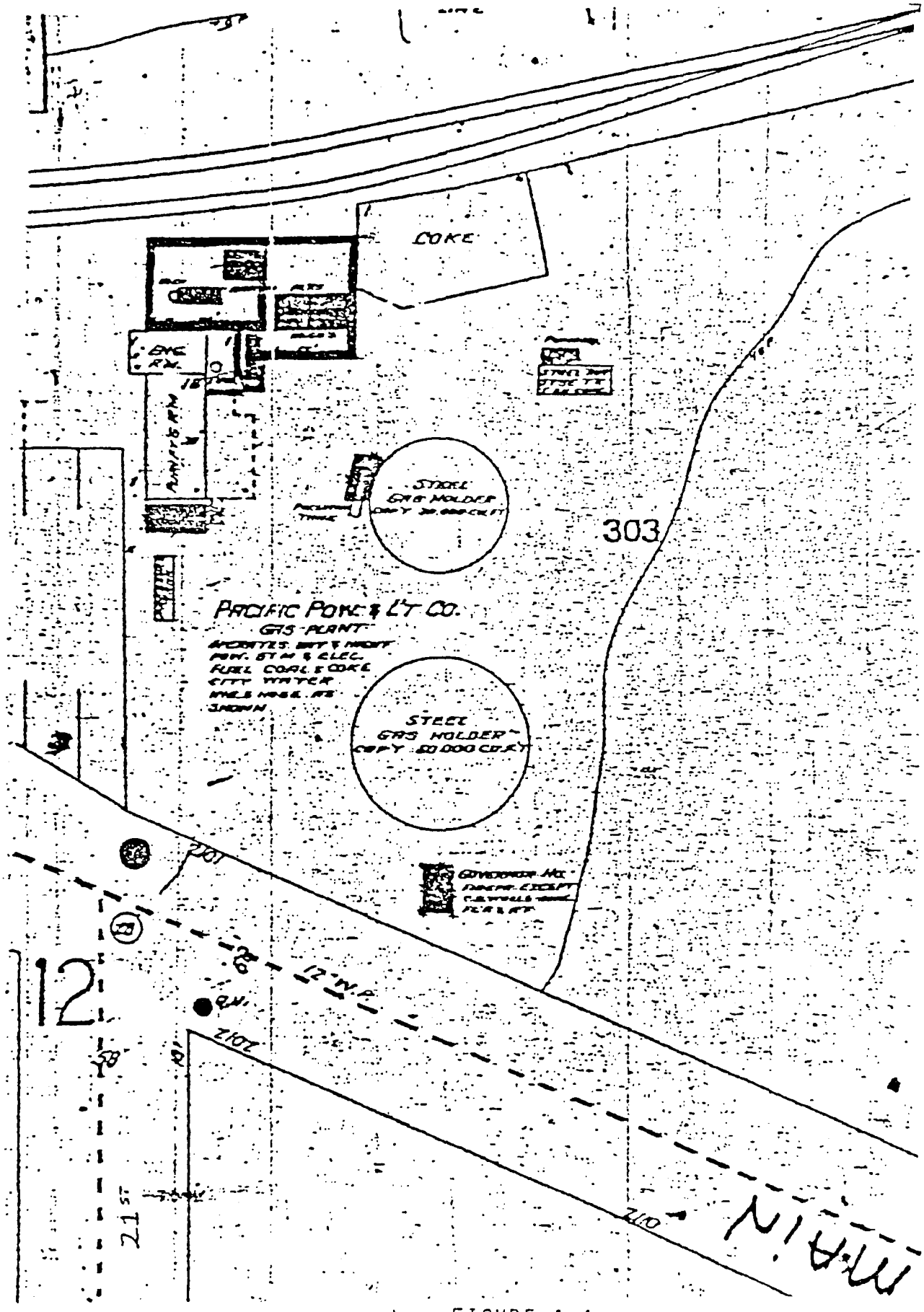

FIGURE A-4
PACIFIC POWER & LIGHT COMPANY
Lewiston, Idaho
Sanborn Fire Insurance Map, 1928
Scale Unknown

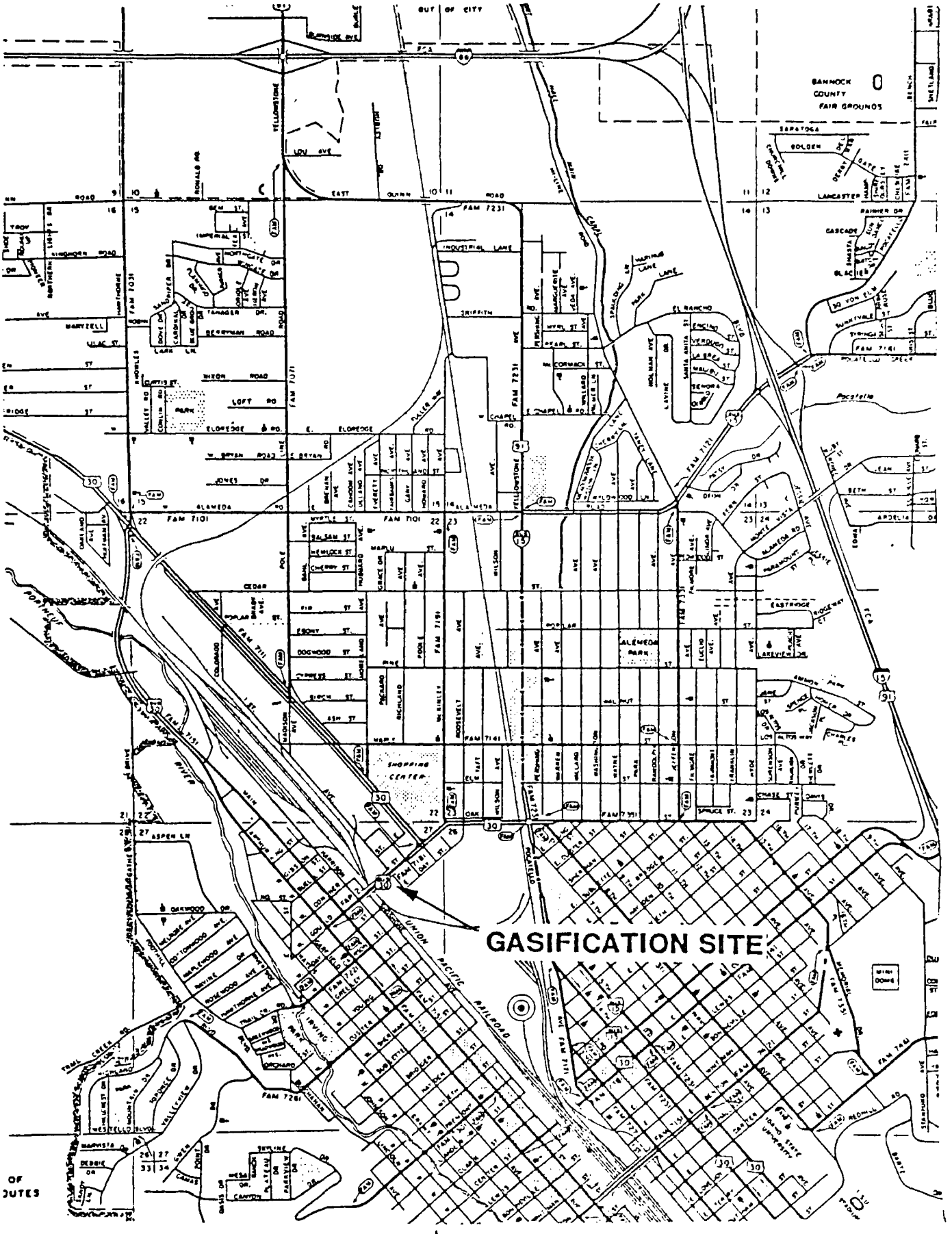

FIGURE A-5
POCATELLO GAS MANUFACTURING SITE
Pocatello, Idaho
Scale: 1" = 2,250 feet

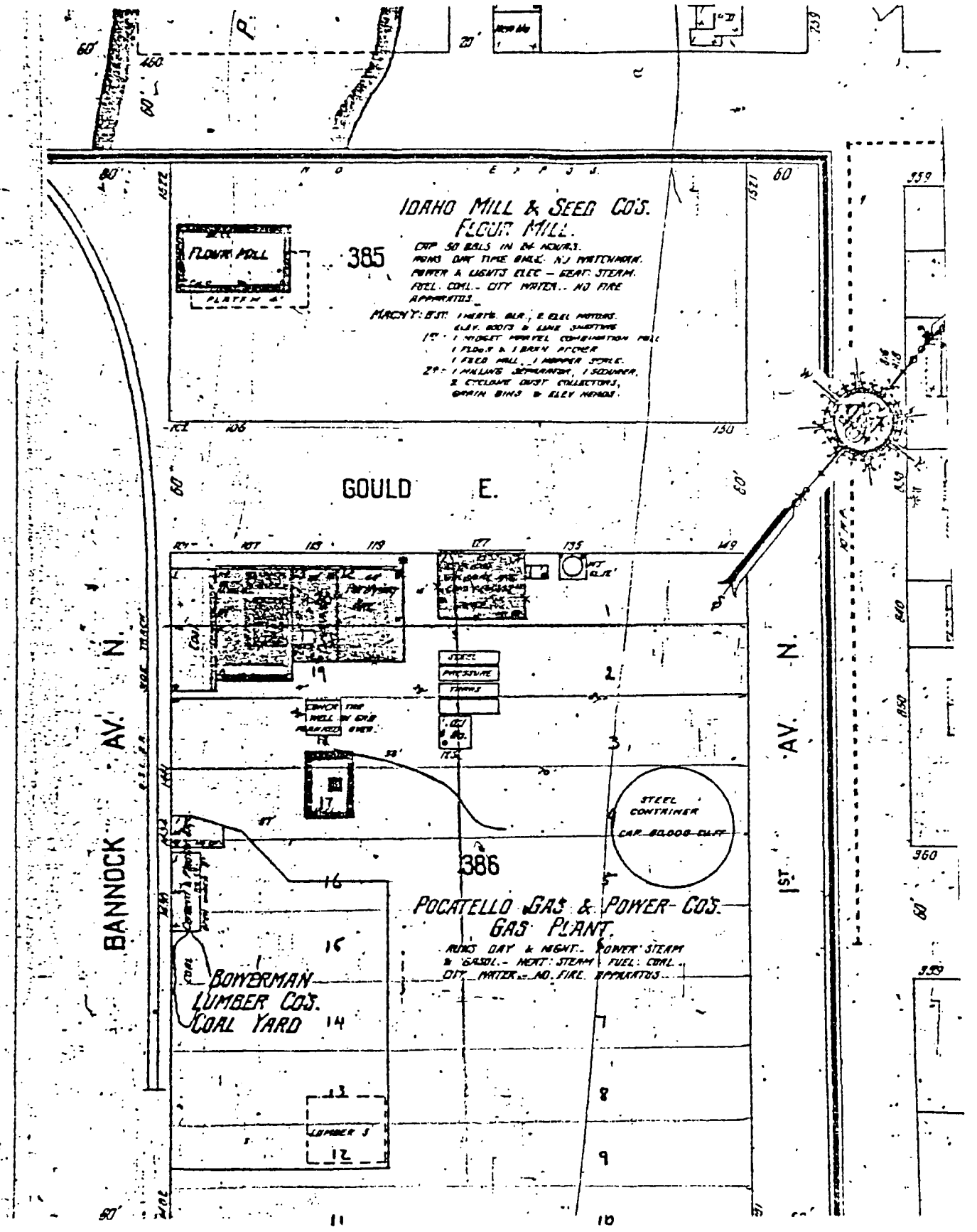

FIGURE A-6
POCATELLO GAS & POWER COMPANY
Pocatello, Idaho
Sanborn Fire Insurance Map. 1915
Scale Unknown

APPENDIX B

OREGON GASIFICATION SITE MAPS

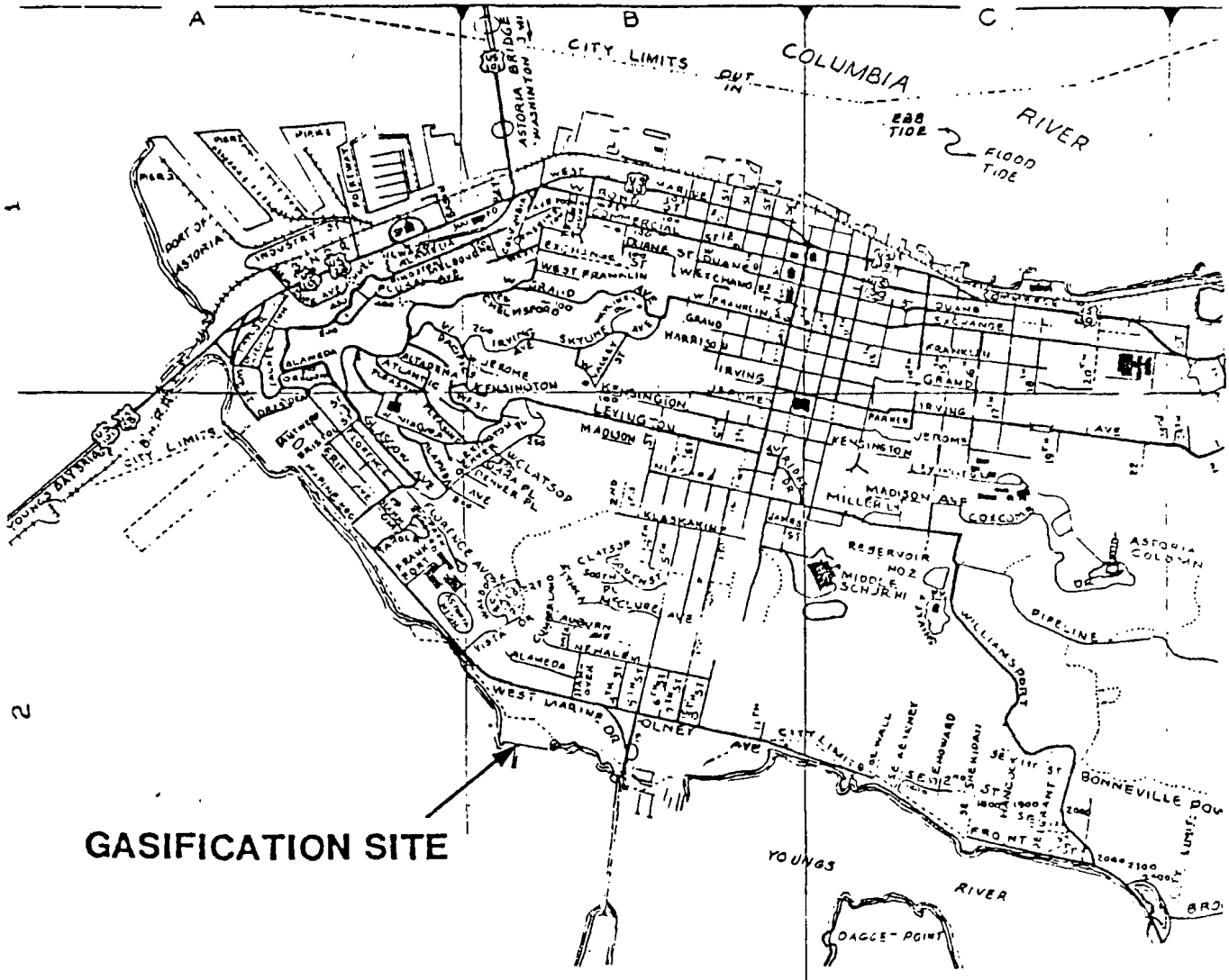

FIGURE B-1
ASTORIA GAS MANUFACTURING SITE
Astoria, Oregon
No Scale

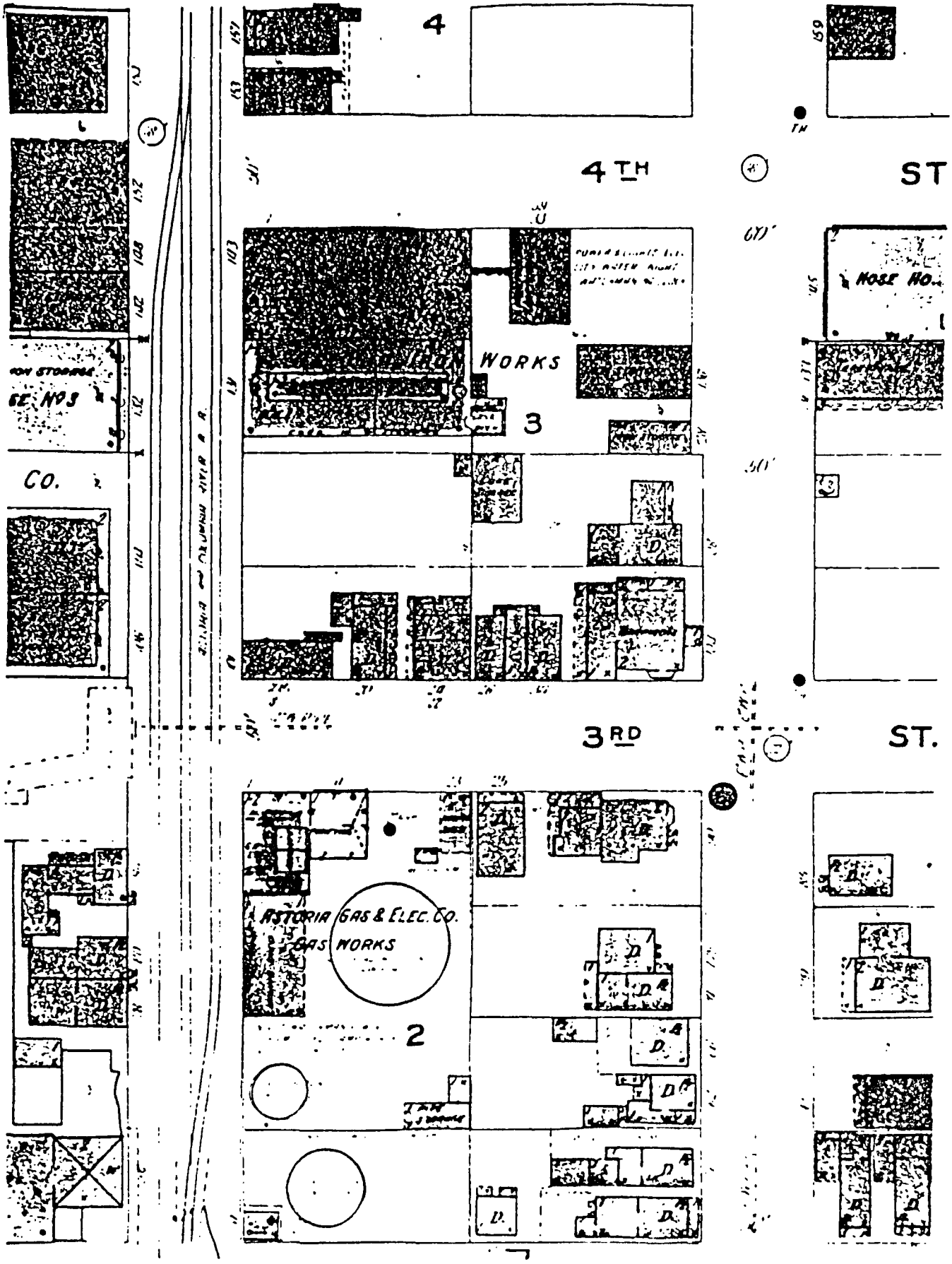

FIGURE B-2
ASTORIA GAS & ELECTRIC COMPANY
Astoria, Oregon
Sanborn Fire Insurance Map, 1908
No Scale

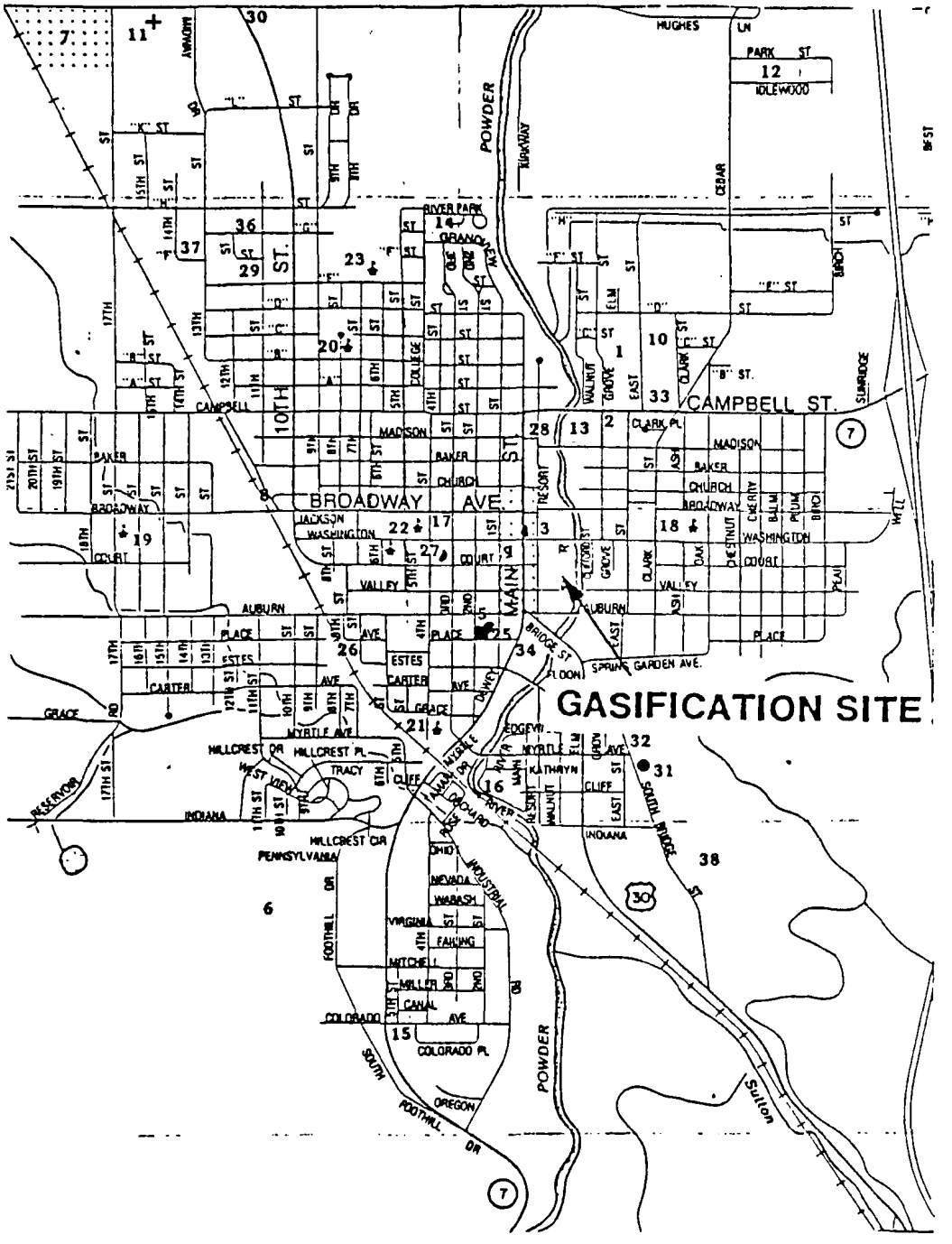

FIGURE B-3
BAKER GAS MANUFACTURING SITE
Baker, Oregon
Scale: 1 mile = 2½"

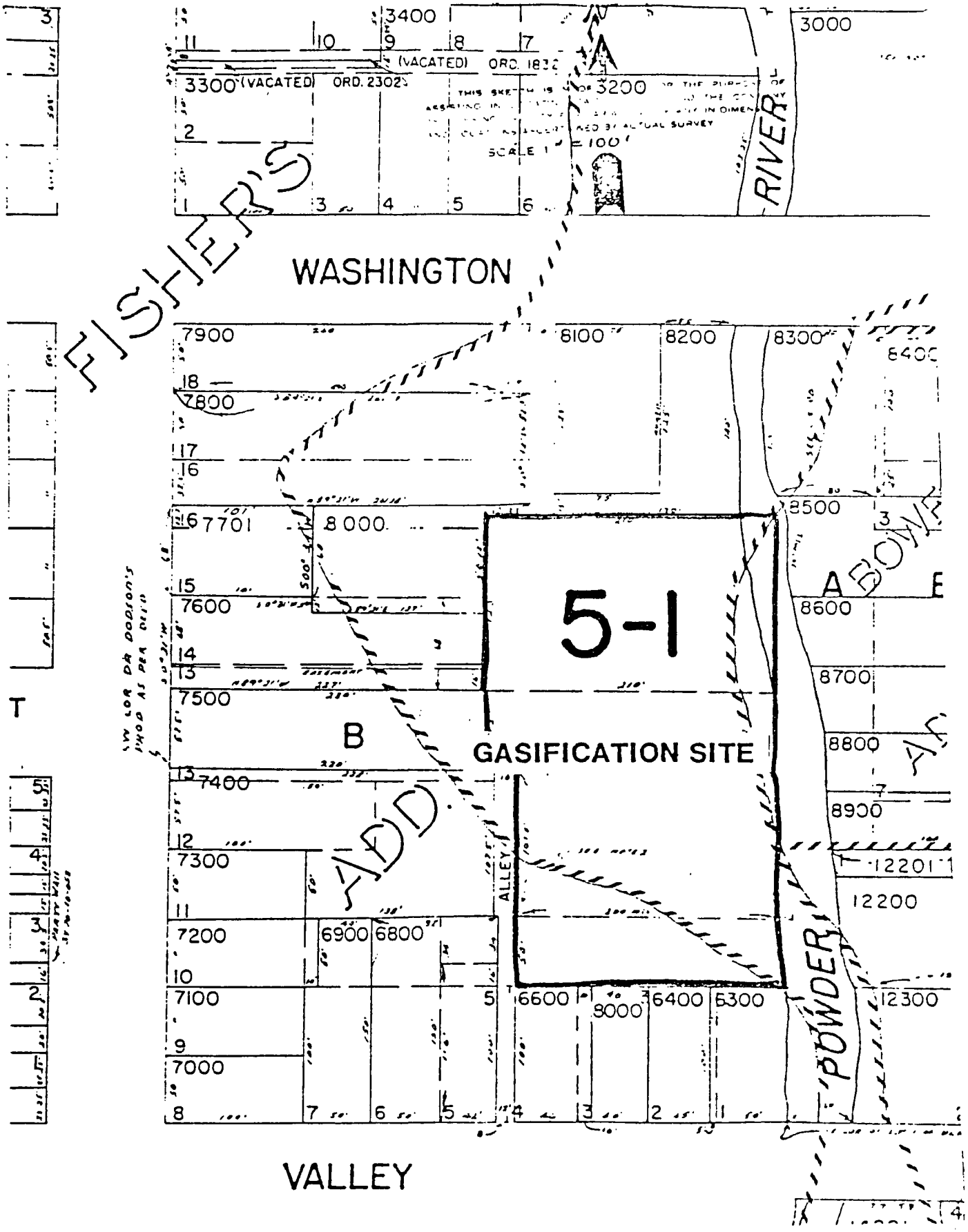

FIGURE B-4
FISHERS ADDITION TO BAKER
Baker, Oregon
Baker County Plat Map
Scale: 1" = 100 feet

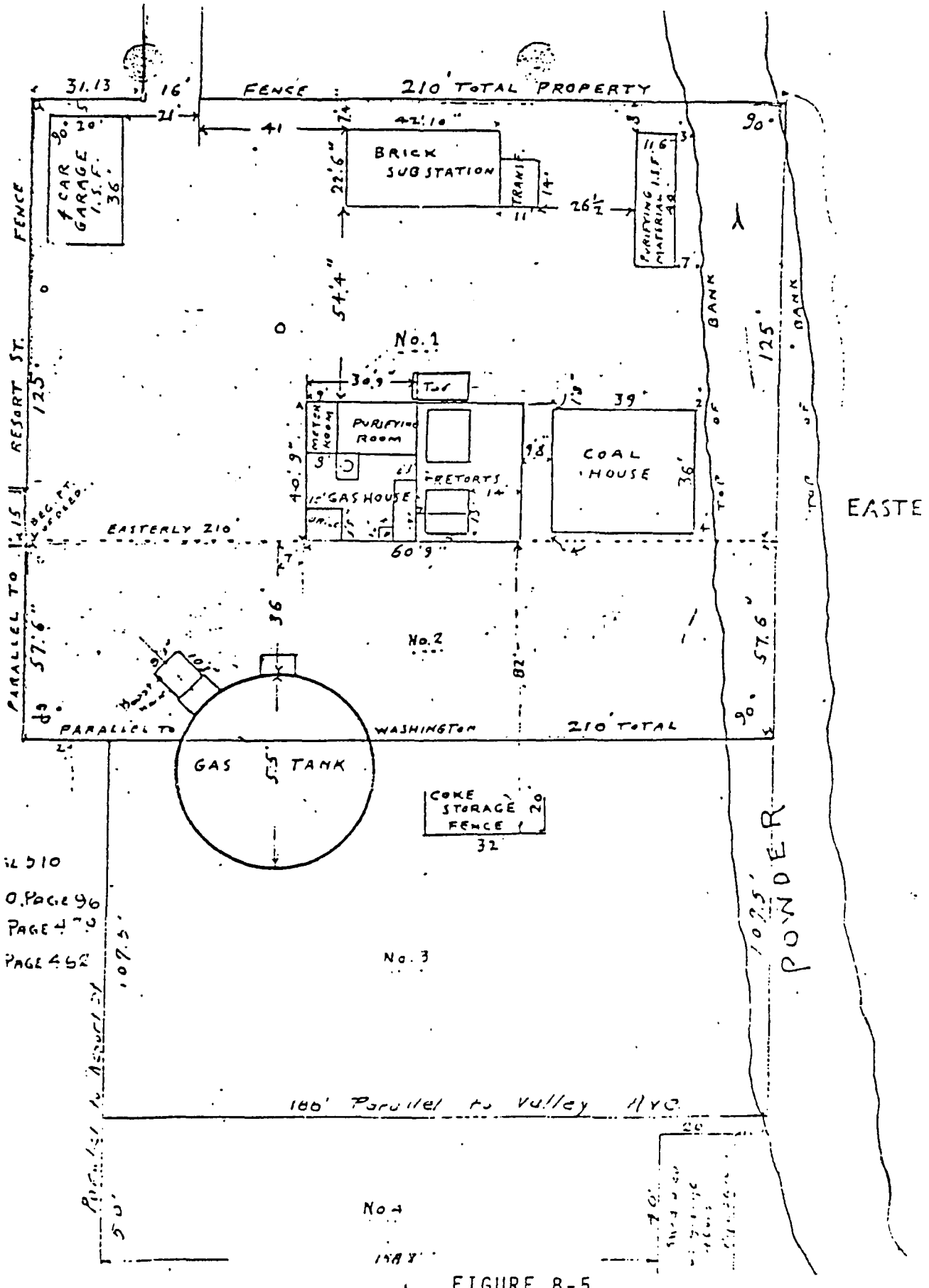

FIGURE B-5
EASTERN OREGON LIGHT & POWER COMPANY
Baker, Oregon
Sanborn Fire Insurance Map, Post 1923
N Scale: ½" = 1000 feet

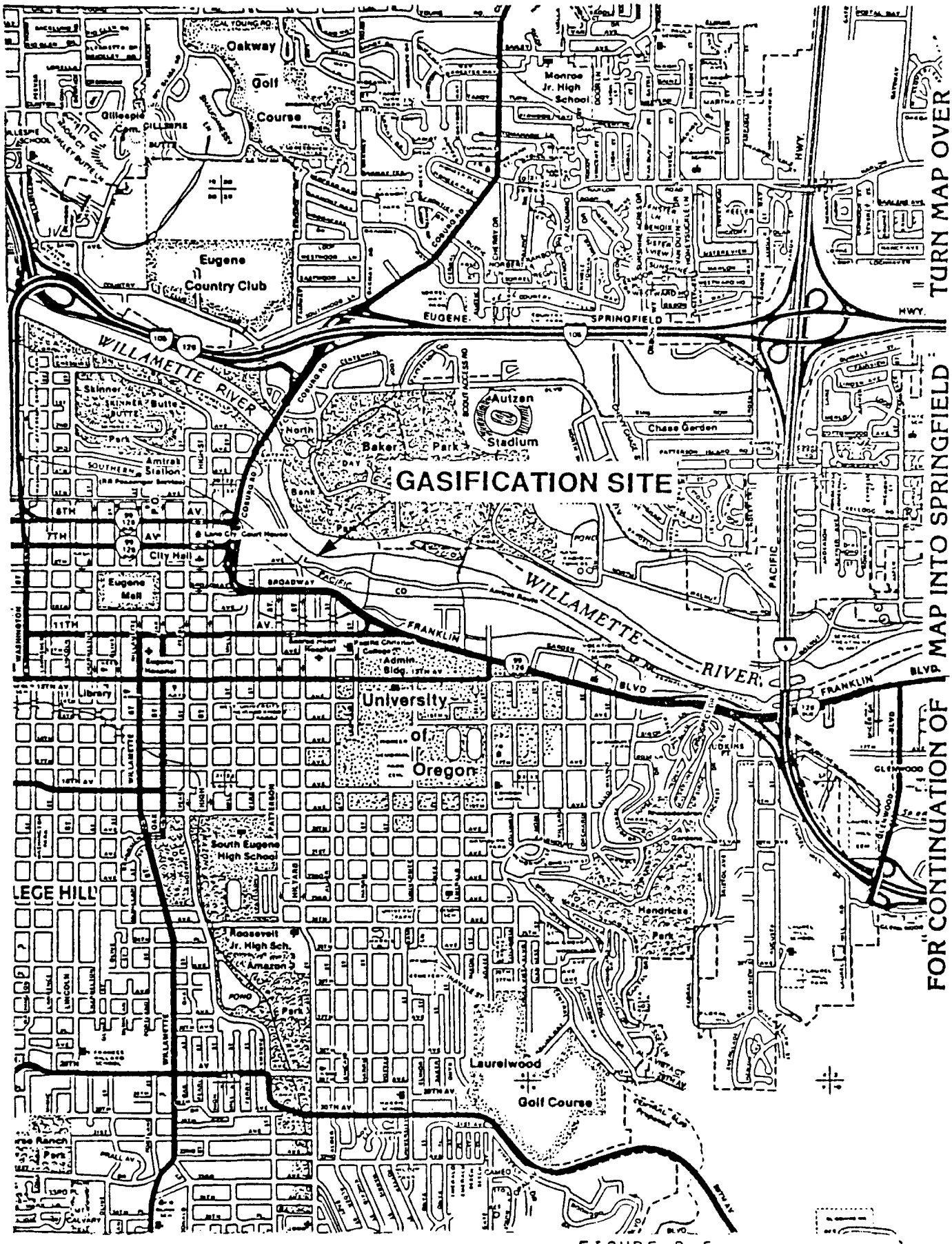

FIGURE B-6
EUGENE GAS MANUFACTURING SITE
Eugene, Oregon
Scale: 1 mile = 3¼ inches

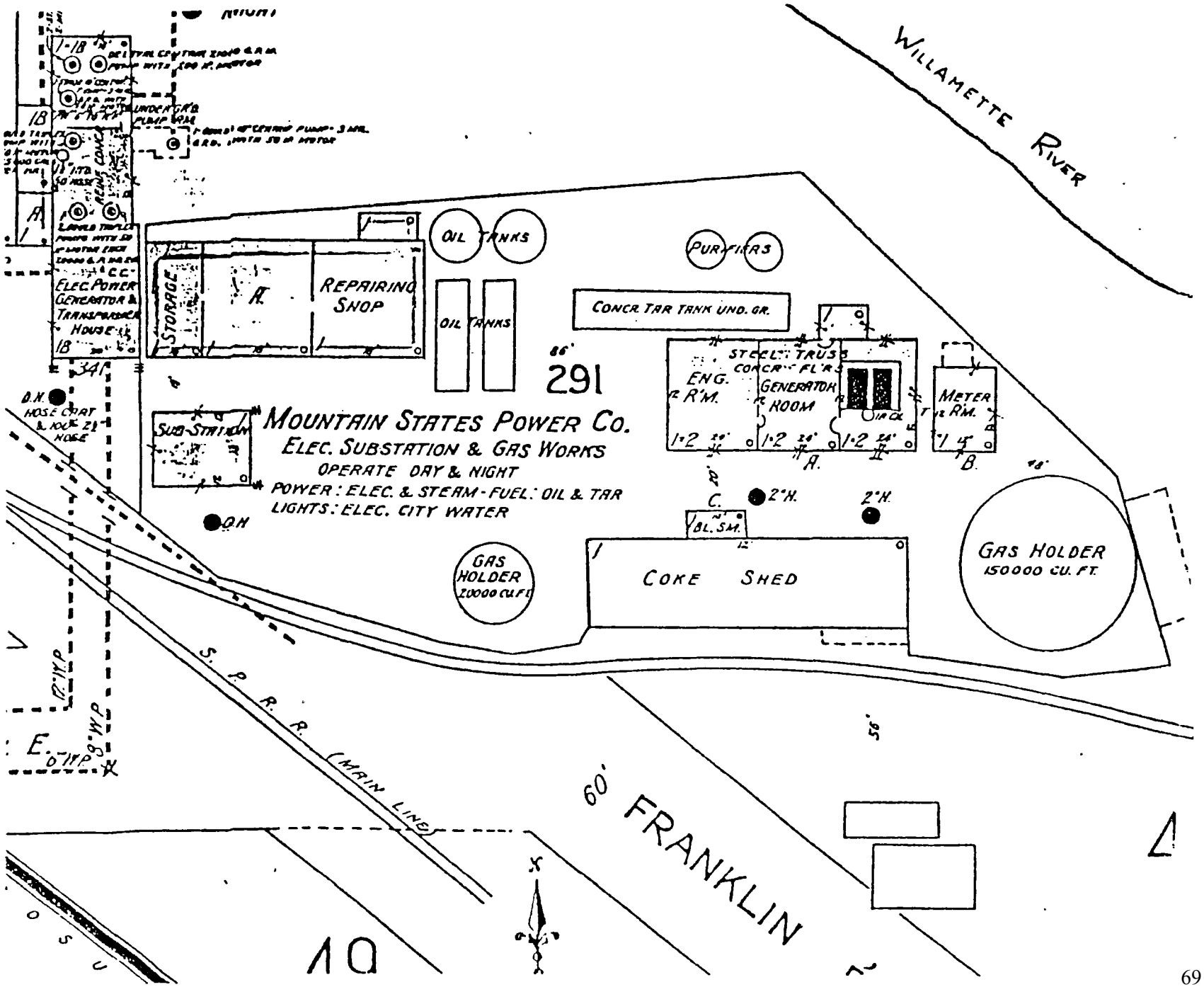

FIGURE B-7
MOUNTAIN STATES POWER COMPANY
Eugene, Oregon
Sanborn Fire Insurance Map, 1925
Scale Unknown

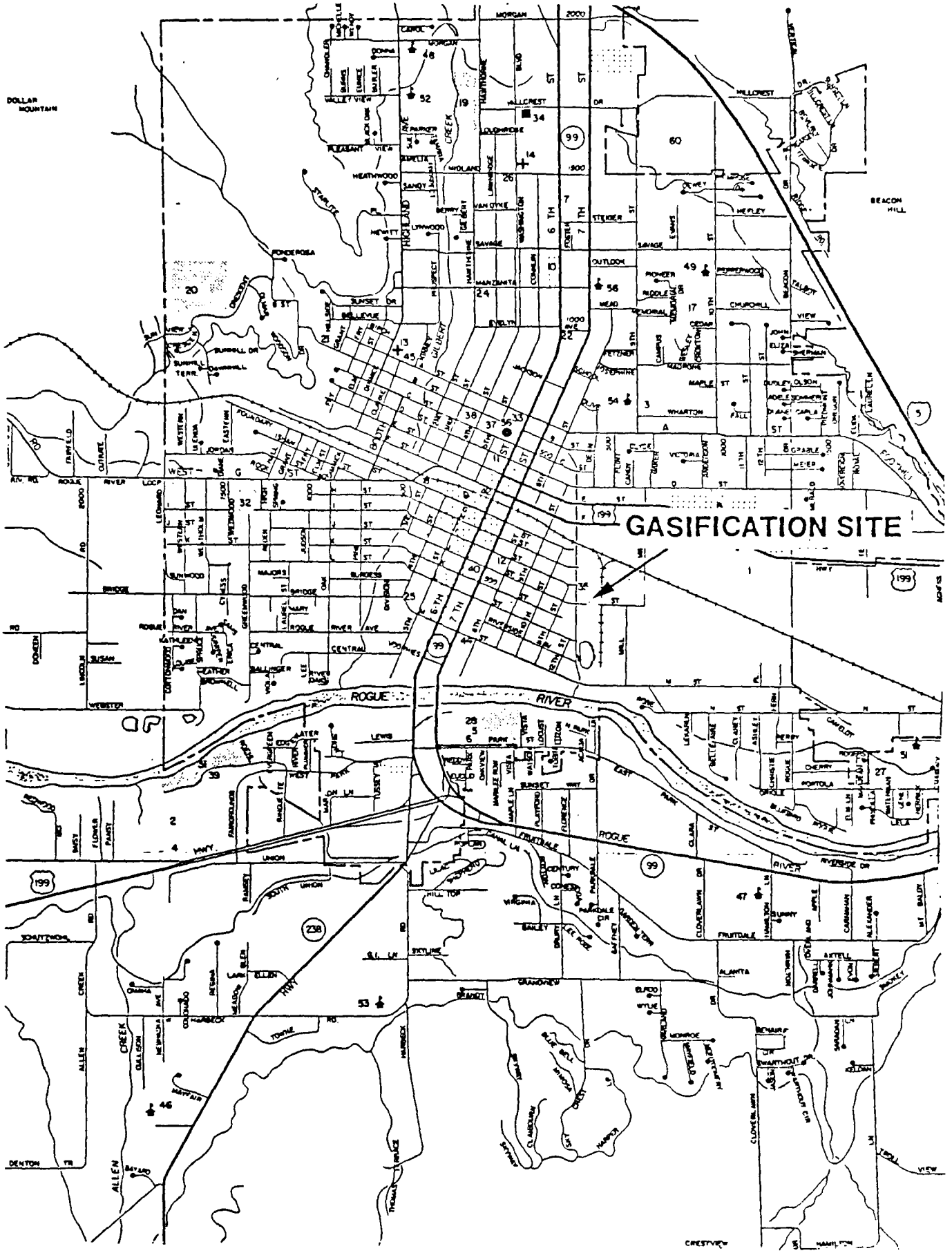

FIGURE B-8
GRANTS PASS GAS MANUFACTURING SITE
Grants Pass, Oregon
Scale: 1 mile = 2½"

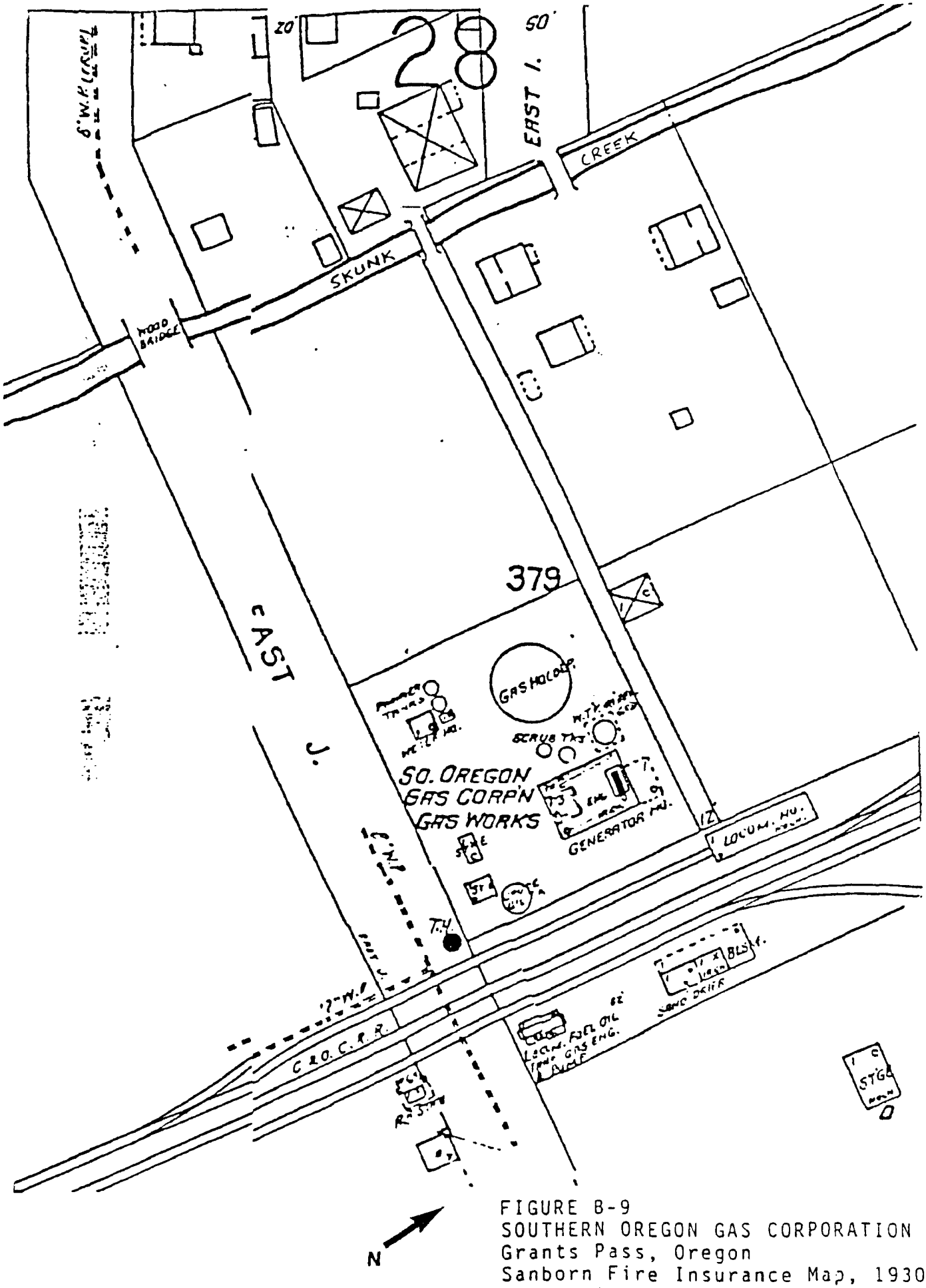

FIGURE B-9
SOUTHERN OREGON GAS CORPORATION
Grants Pass, Oregon
Sanborn Fire Insurance Map, 1930
Scale: 1" = 100 feet

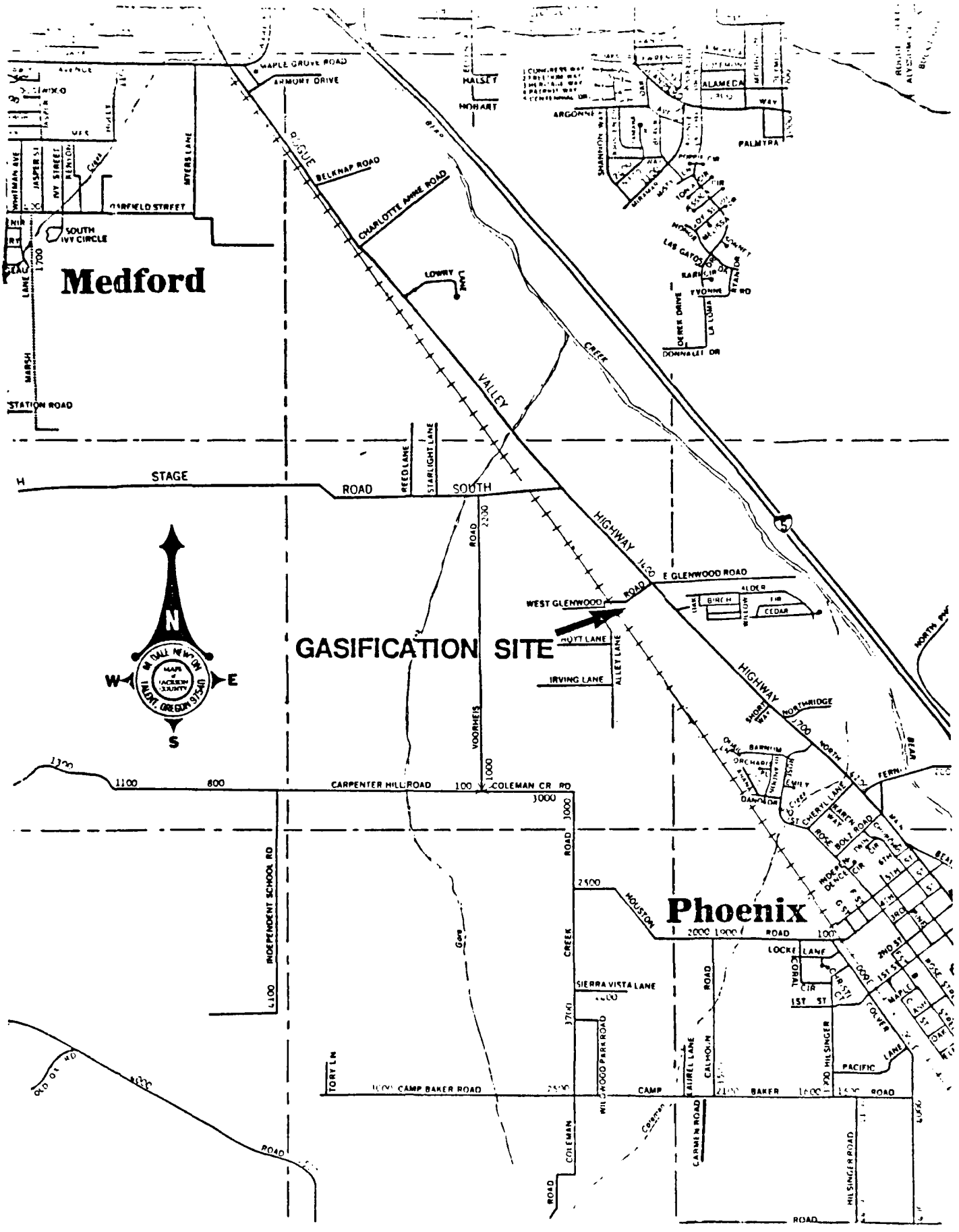

FIGURE B-10
MEDFORD GAS MANUFACTURING SITE
Medford, Oregon
Scale: 1 mile = 2½"

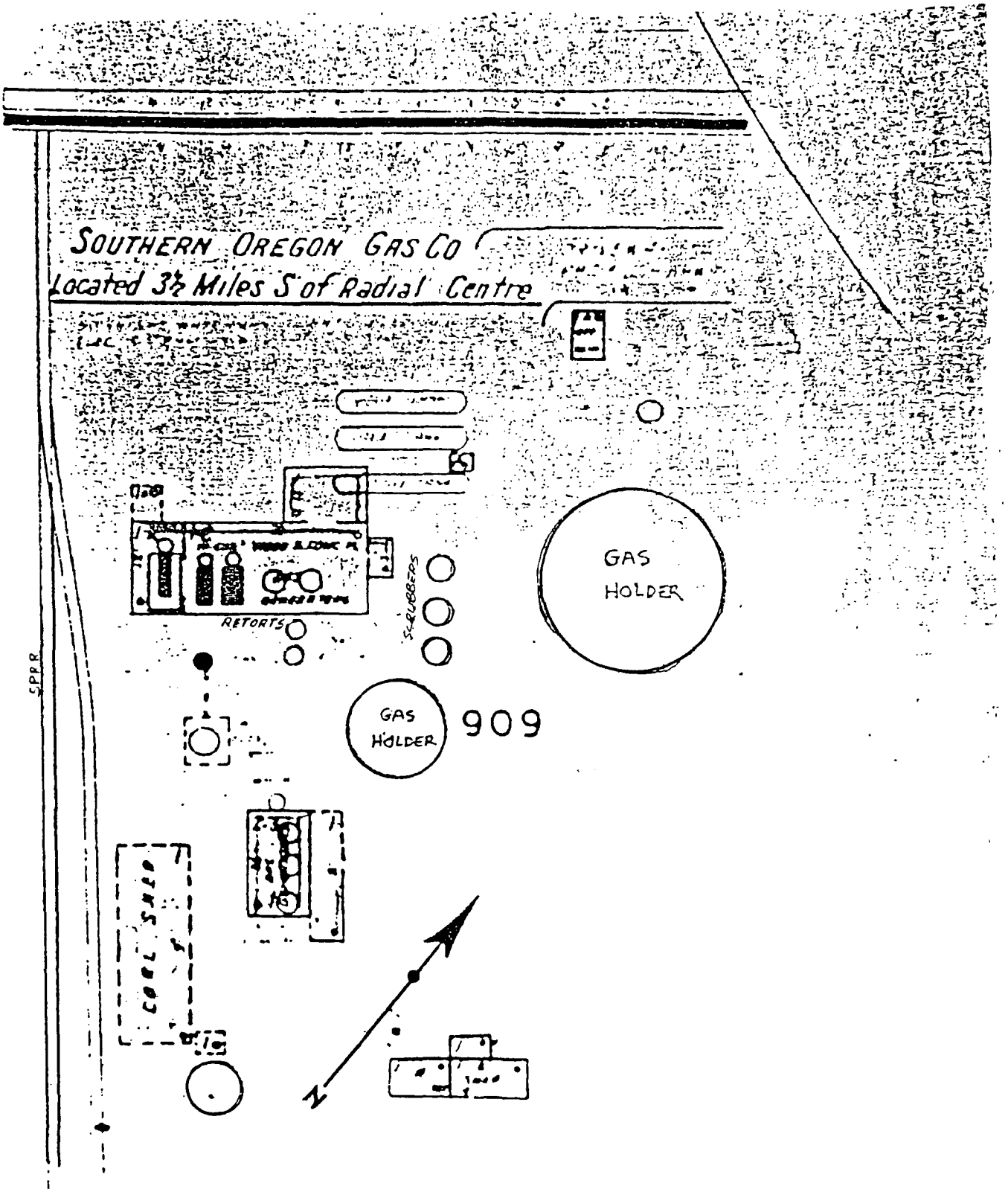

FIGURE B-11
SOUTHERN OREGON GAS COMPANY
Medford, Oregon
Sanborn Fire Insurance Map, 1927
Scale Unknown

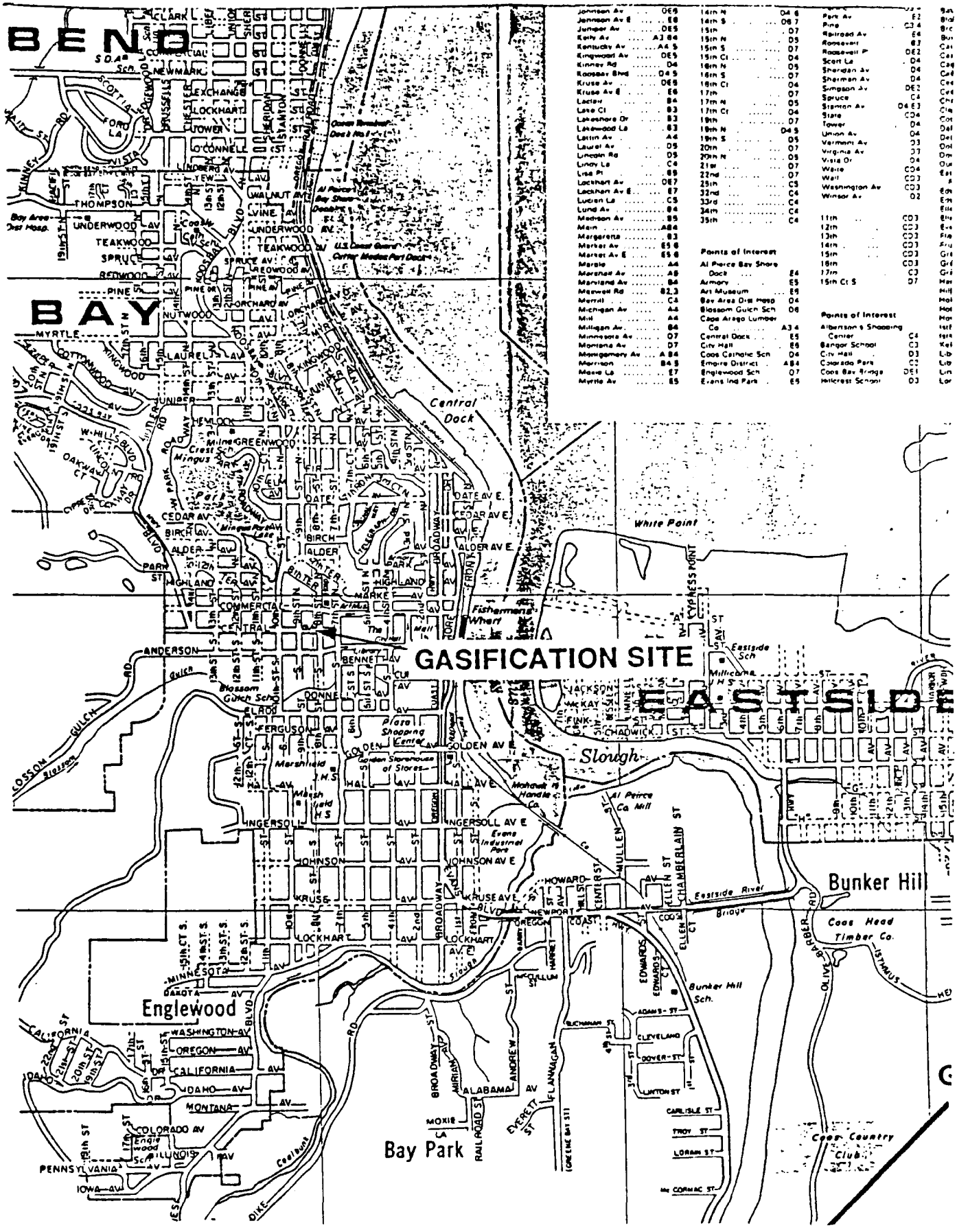

FIGURE B-12
NORTH BEND GAS MANUFACTURING SITE
Coos Bay, Oregon
Scale: 2 1/8" = 3 miles

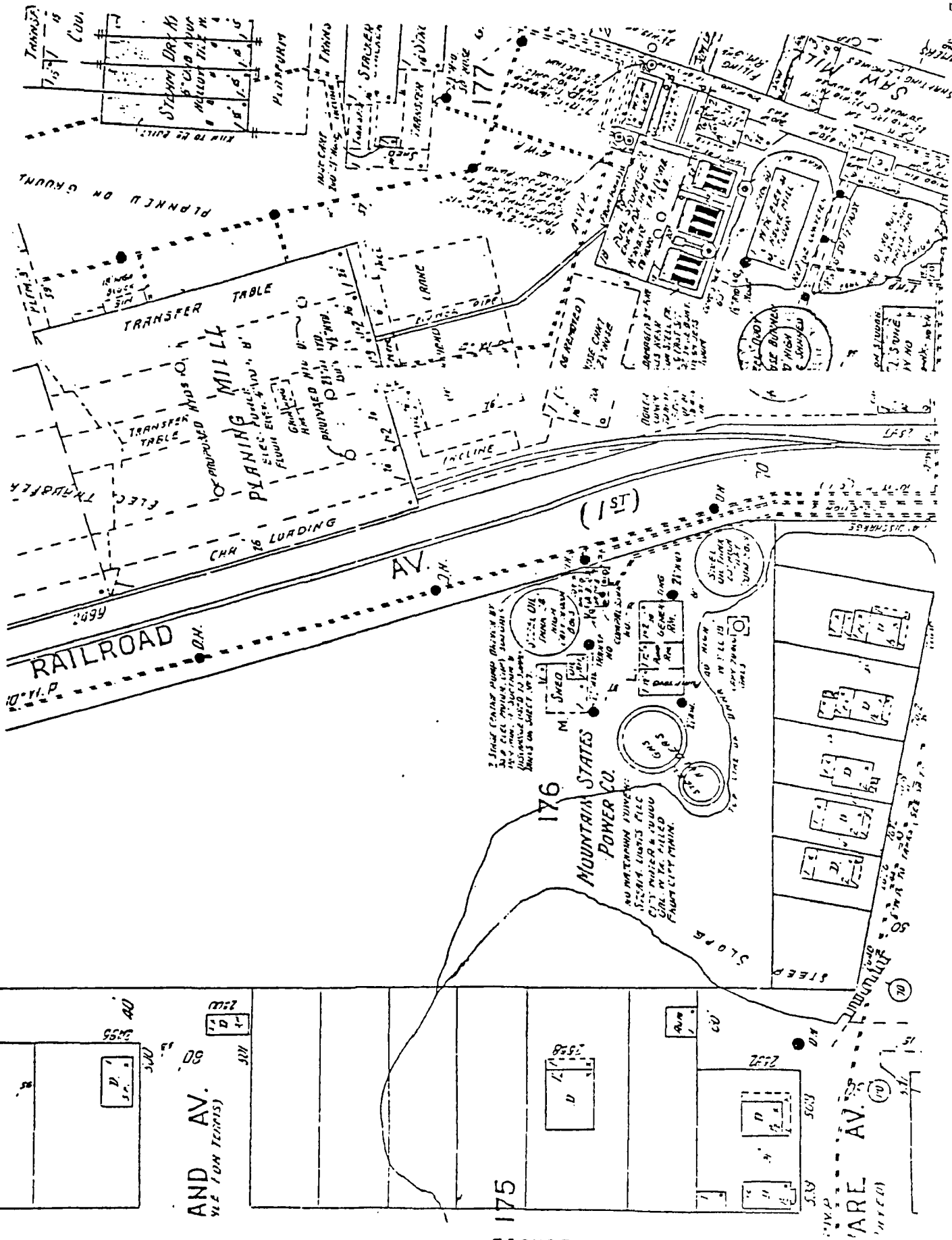

FIGURE B-13
MOUNTAIN STATES POWER COMPANY
North Bend, Oregon
Sanborn Fire Insurance Map, 1920
Scale Unknown

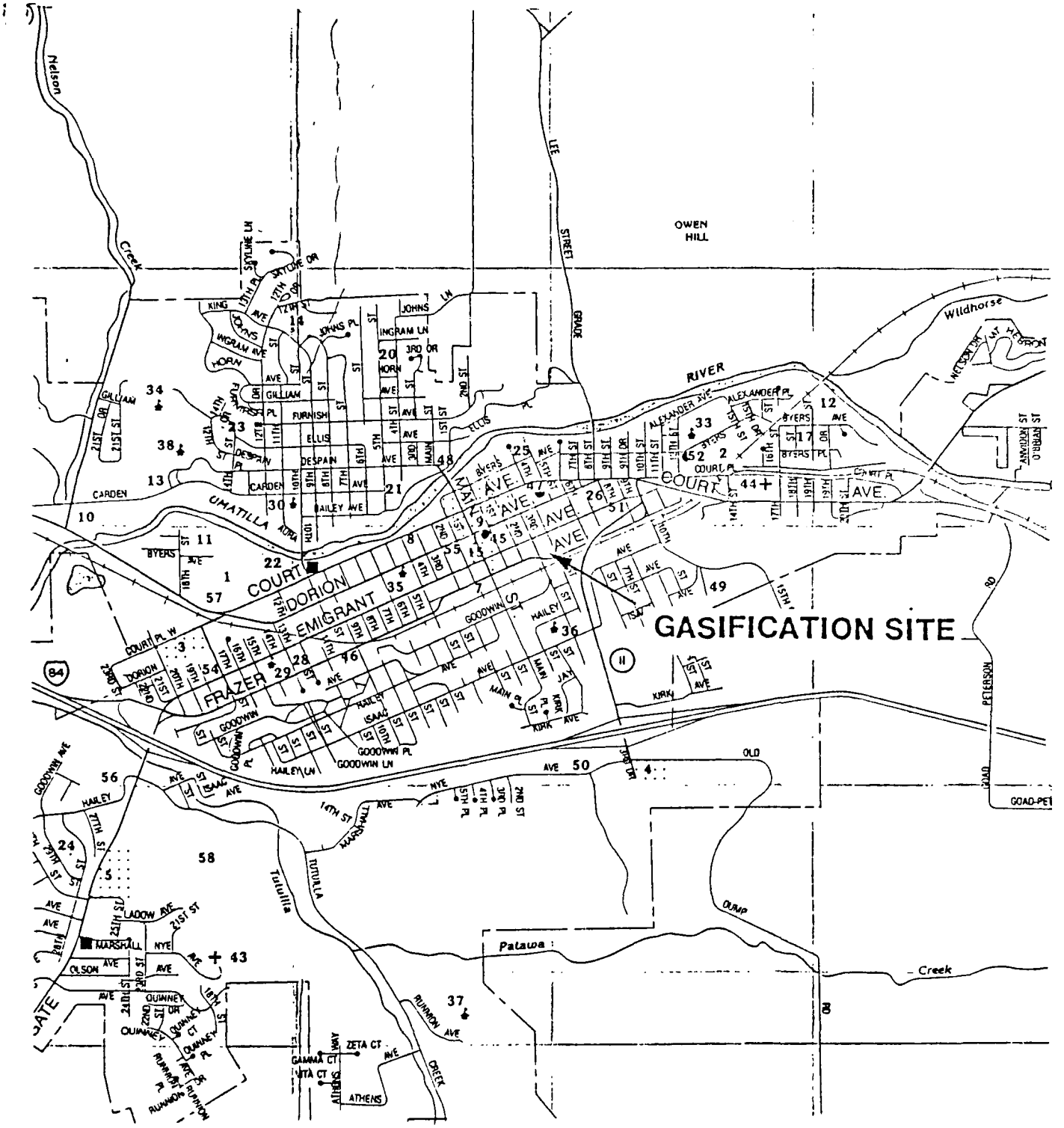

FIGURE B-14
PENDLETON GAS MANUFACTURING SITE
Pendleton, Oregon
Scale: 1 mile = 2¼"

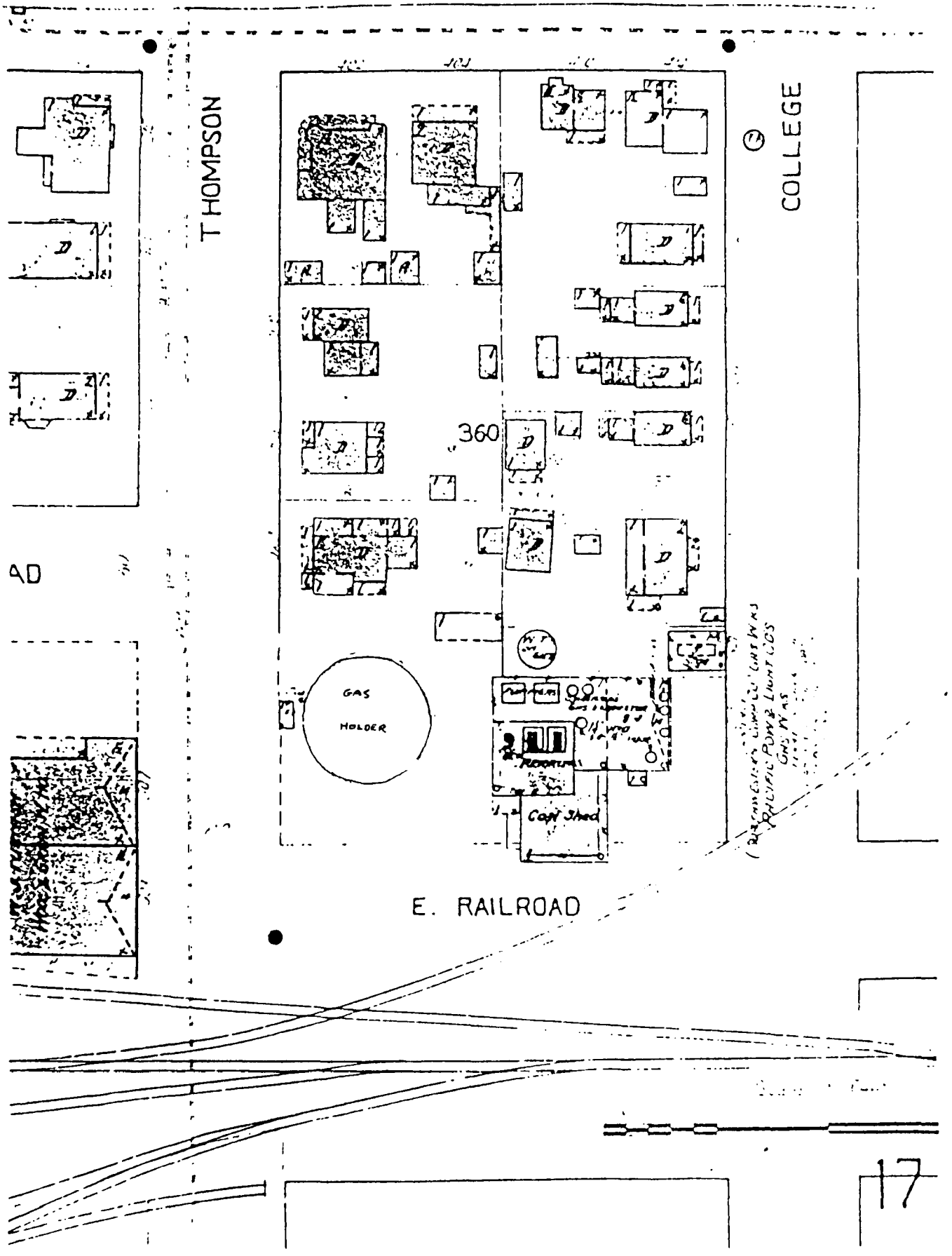

FIGURE B-15
PACIFIC POWER AND LIGHT COMPANY
Pendleton, Oregon
Sanborn Fire Insurance Map, 1922
Scale: 1000 feet = 3¼"

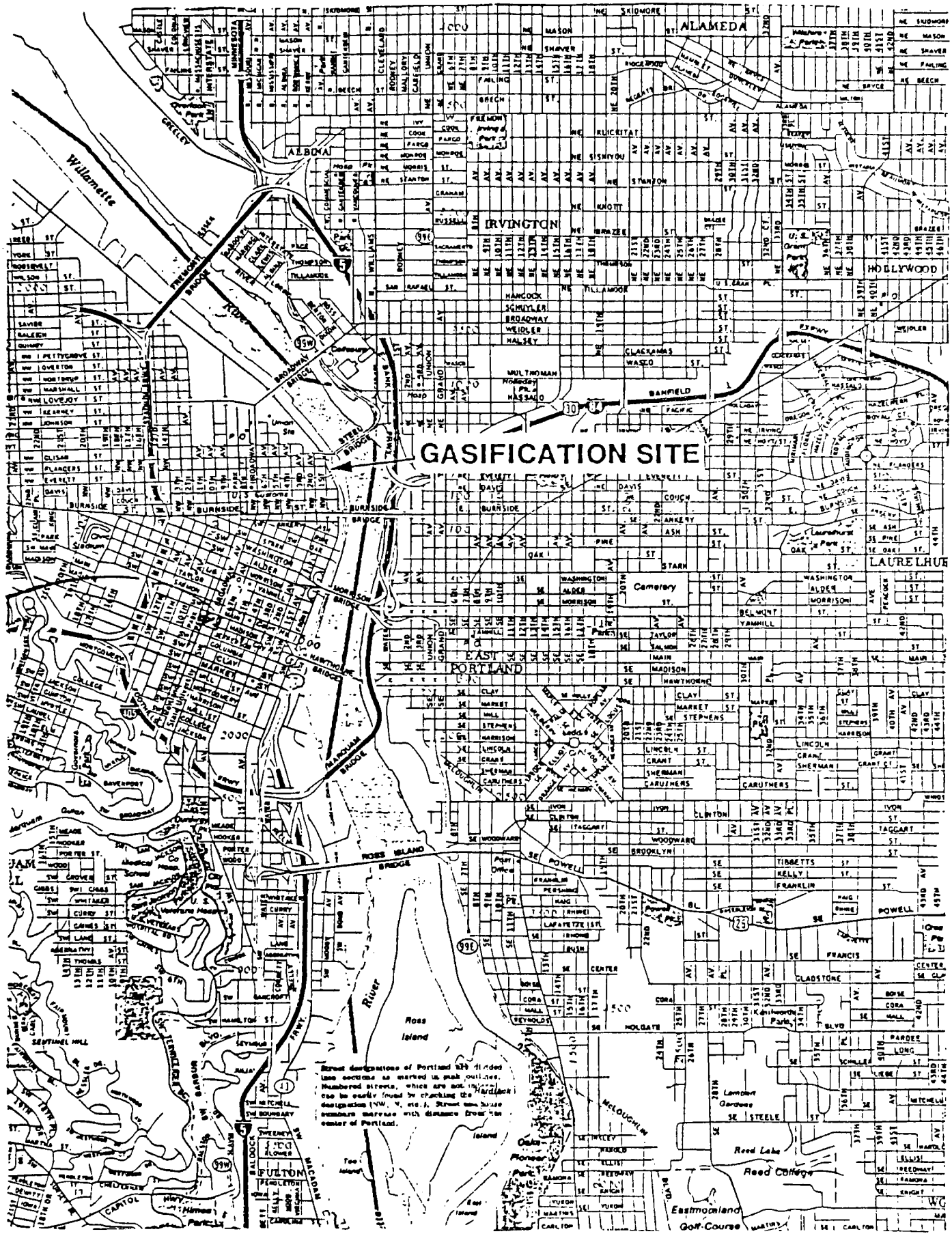

FIGURE B-16
PORTLAND GAS MANUFACTURING SITE
Portland, Oregon
Scale: 1" = 1000 feet

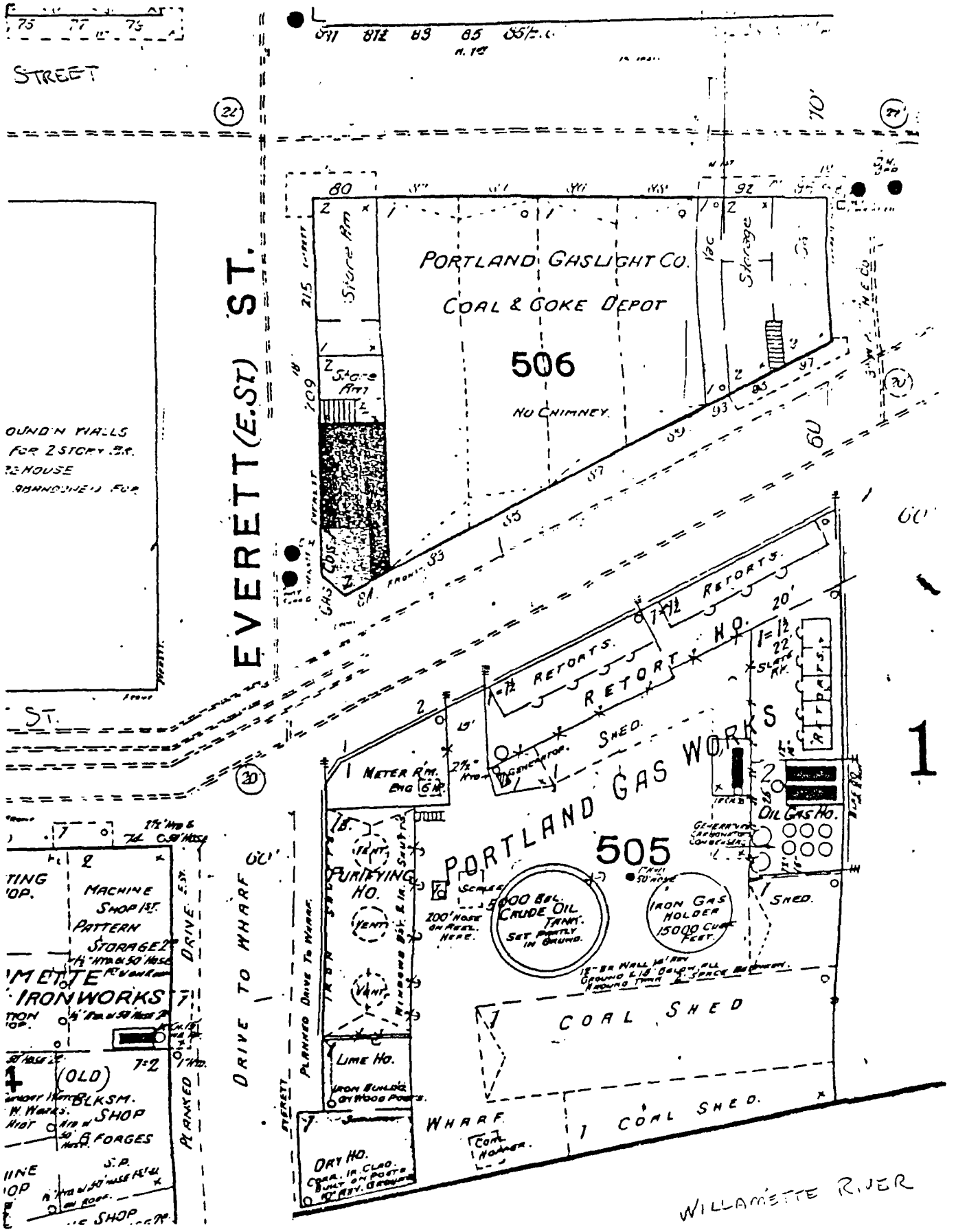

FIGURE B-17
PORTLAND GAS & LIGHT COMPANY
Portland, Oregon
Sanborn Fire Insurance Map, 1895
Scale Unknown

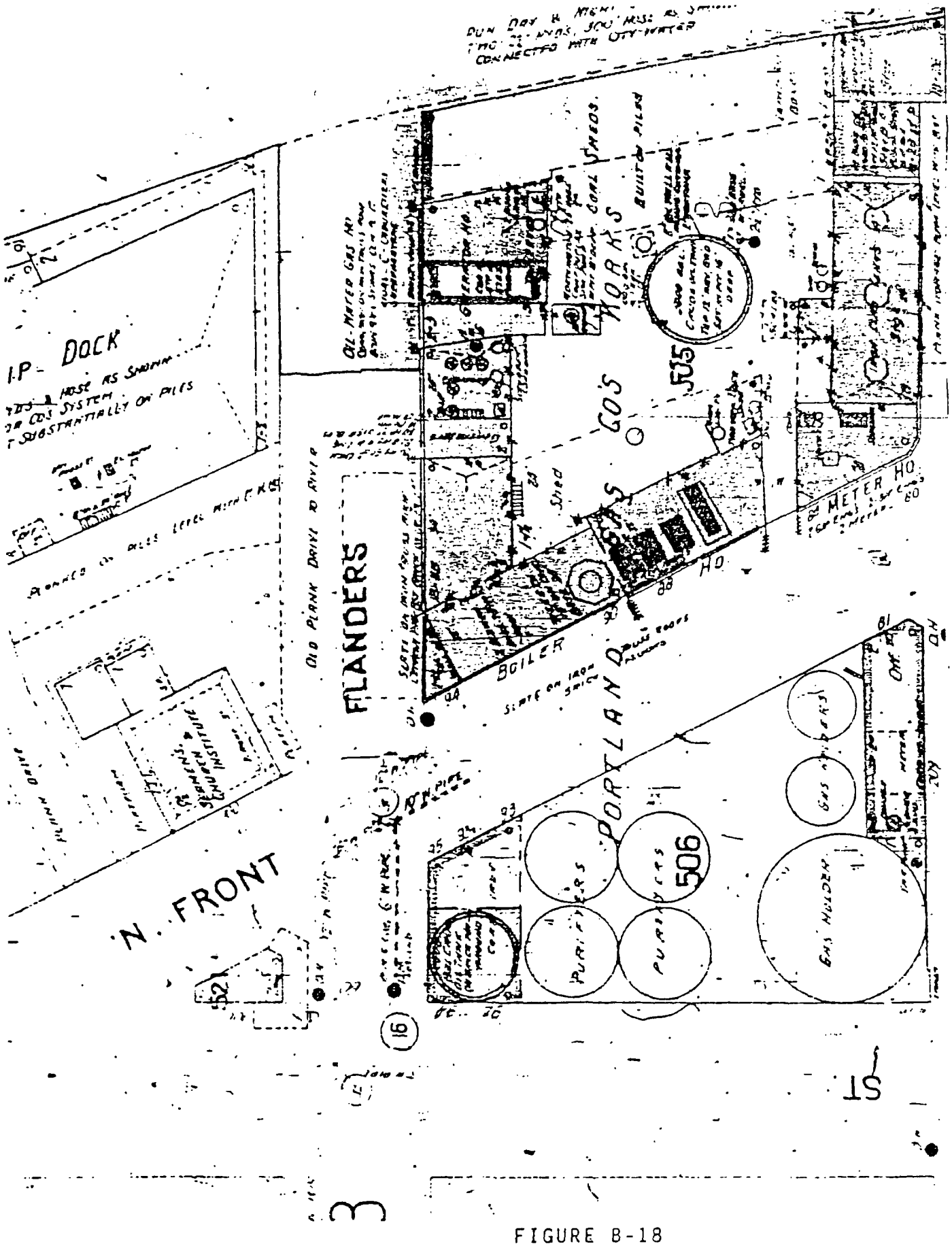

FIGURE B-18
PORTLAND GAS COMPANY
Portland, Oregon
Sanborn Fire Insurance Map, 1908
Scale Unknown

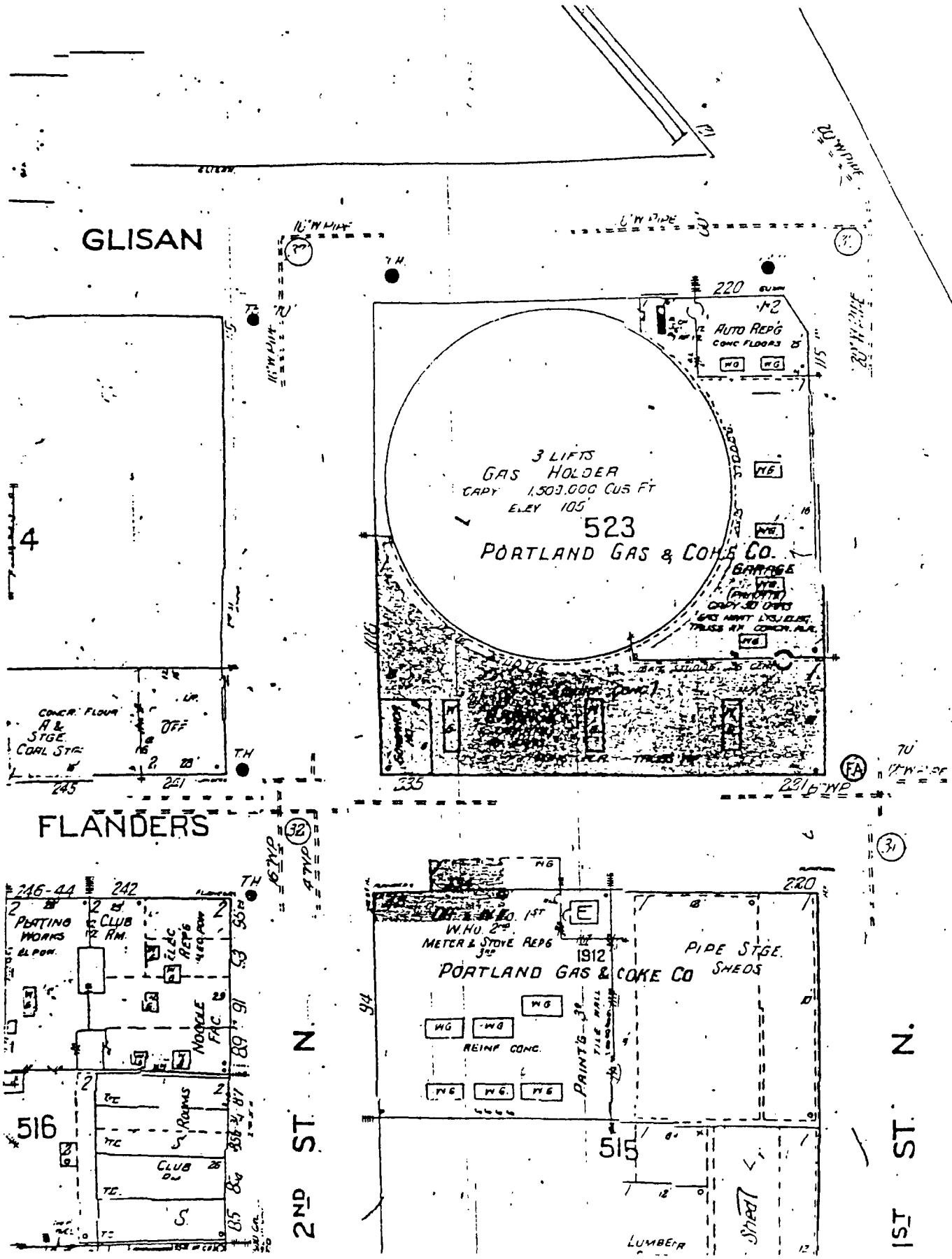

FIGURE B-19
PORTLAND GAS AND COKE COMPANY
Portland, Oregon
Sanborn Fire Insurance Map, 1932
Scale Unknown

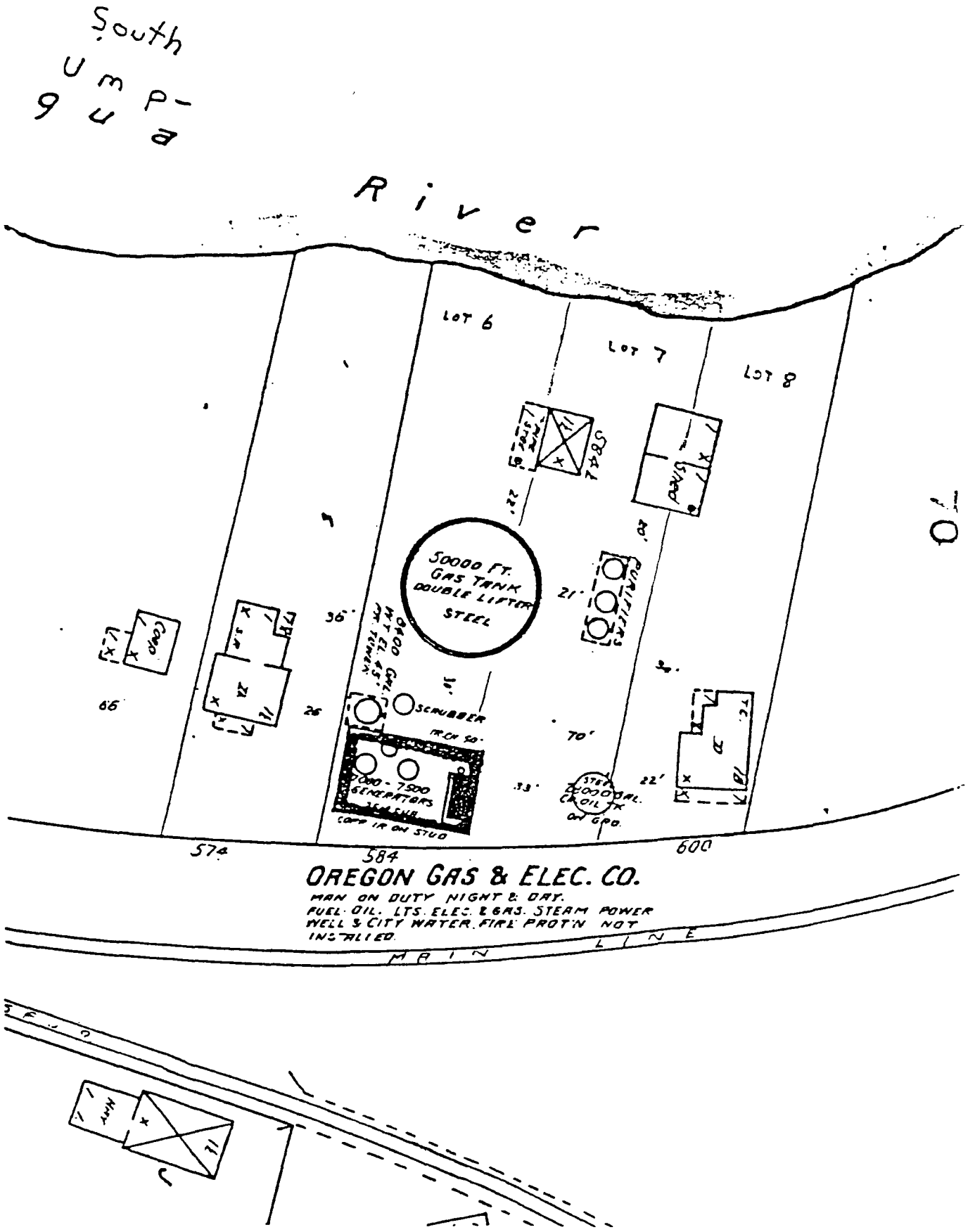

FIGURE B-20
OREGON GAS AND ELECTRIC COMPANY
Roseburg, Oregon
Sanborn Fire Insurance Map, 1912
Scale Unknown

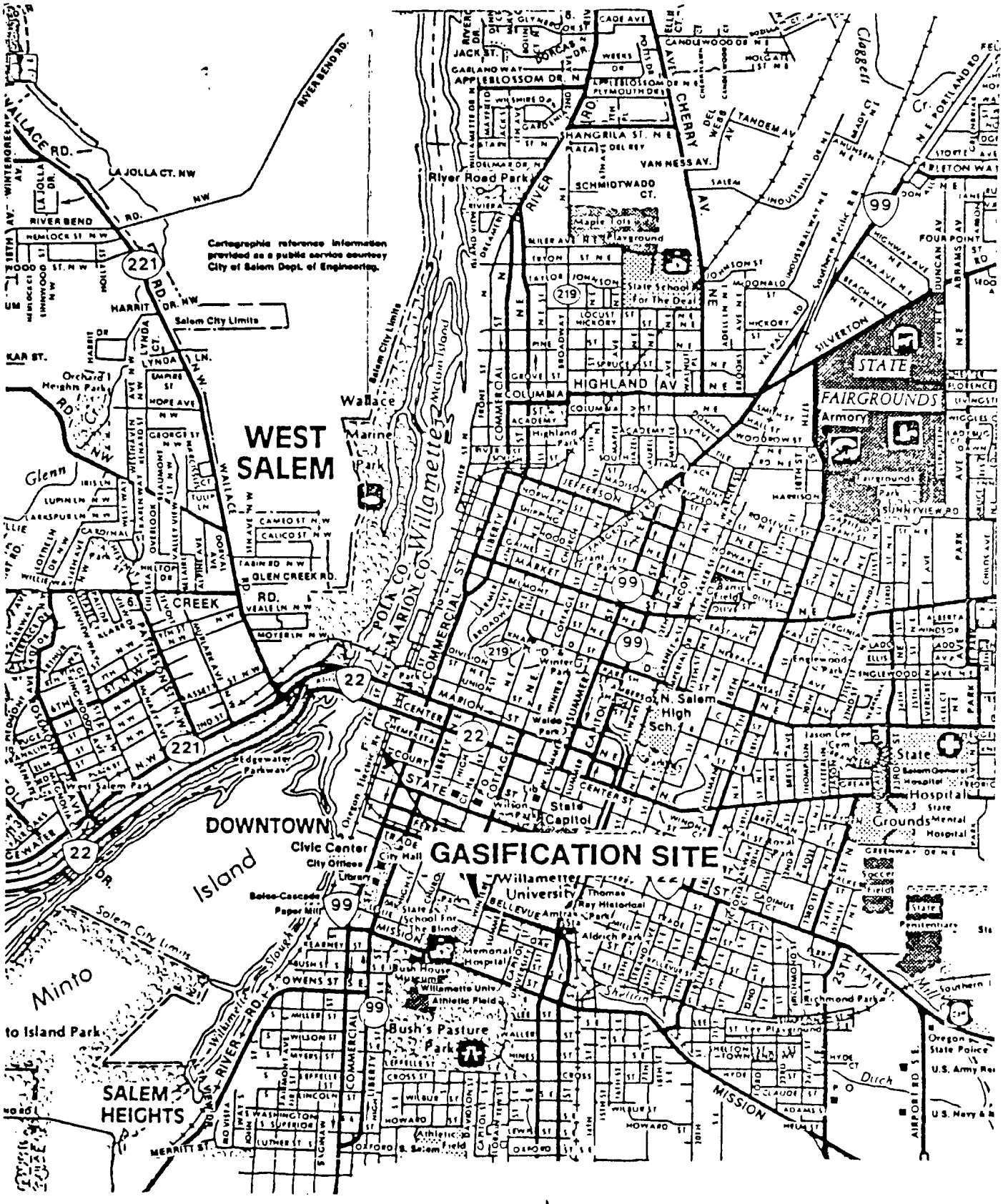

FIGURE B-21
SALEM GAS MANUFACTURING SITE
Salem, Oregon
Scale: 2½" = 1 mile

N

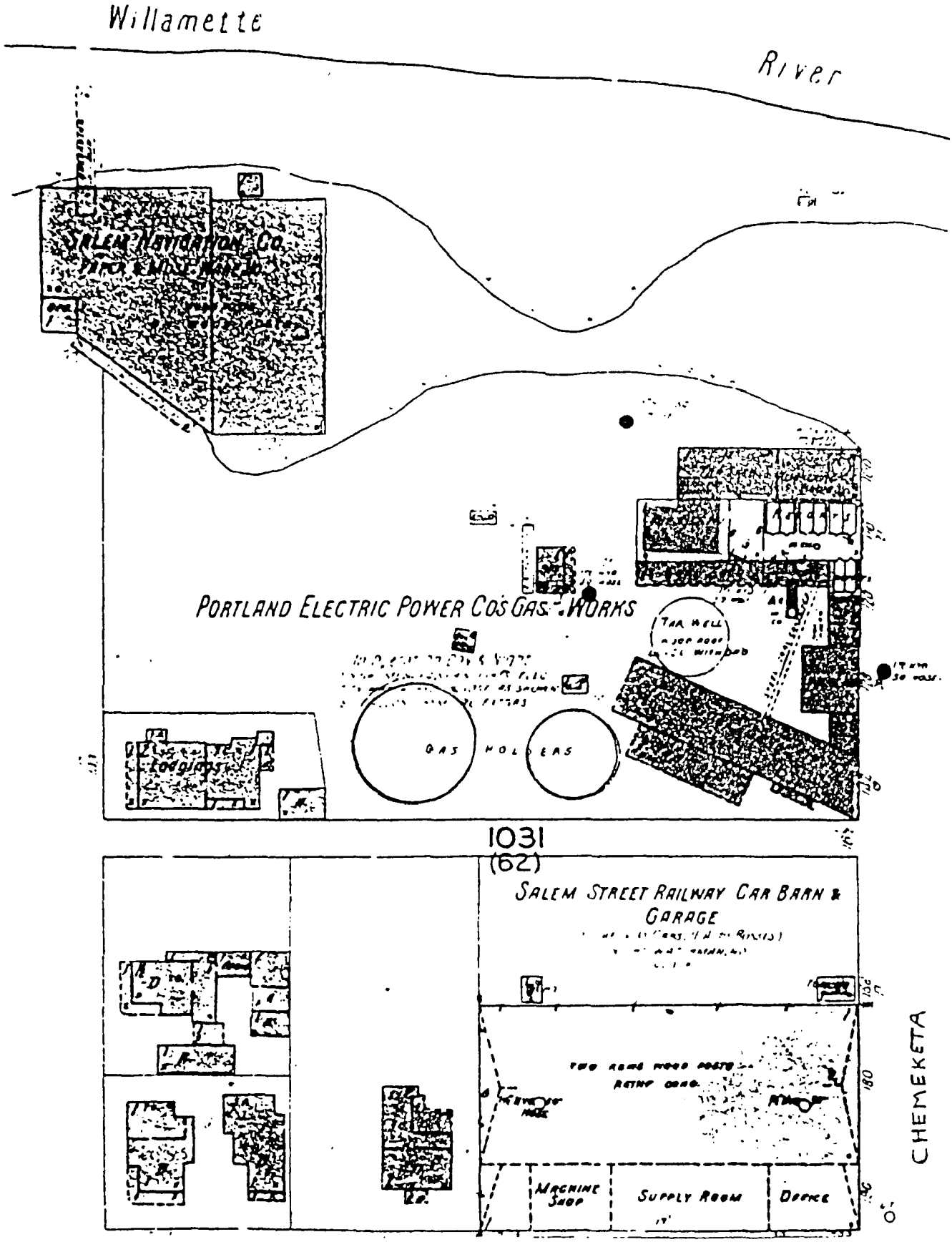

FIGURE B-22
PORTLAND ELECTRIC POWER COMPANY
Salem, Oregon
Sanborn Fire Insurance Map, 1926
Scale: 1 1/8" = 100 feet

APPENDIX C

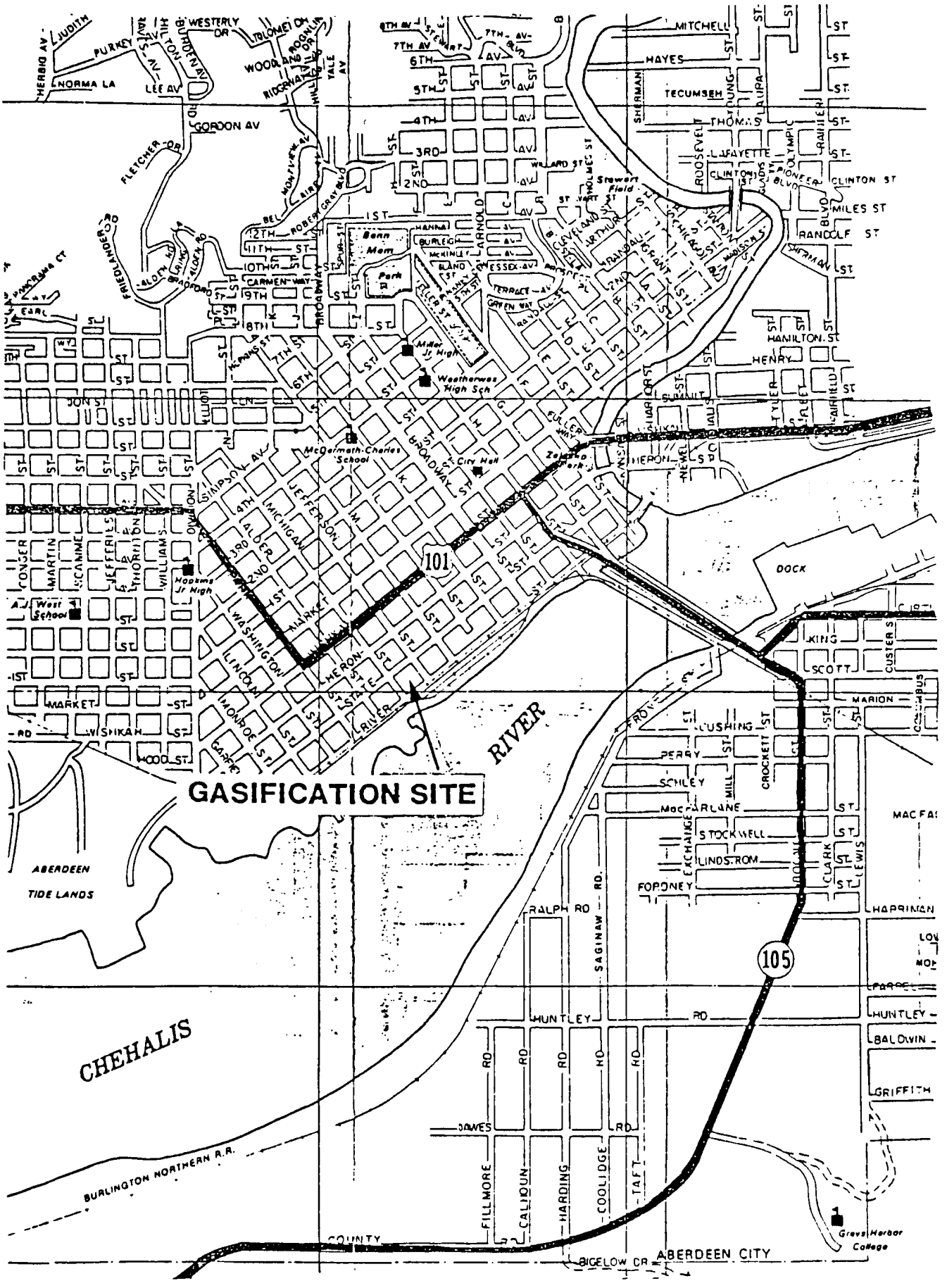

FIGURE C-1
ABERDEEN GAS MANUFACTURING SITE
Aberdeen, WA
Scale: 1 mile = 3 1/4"

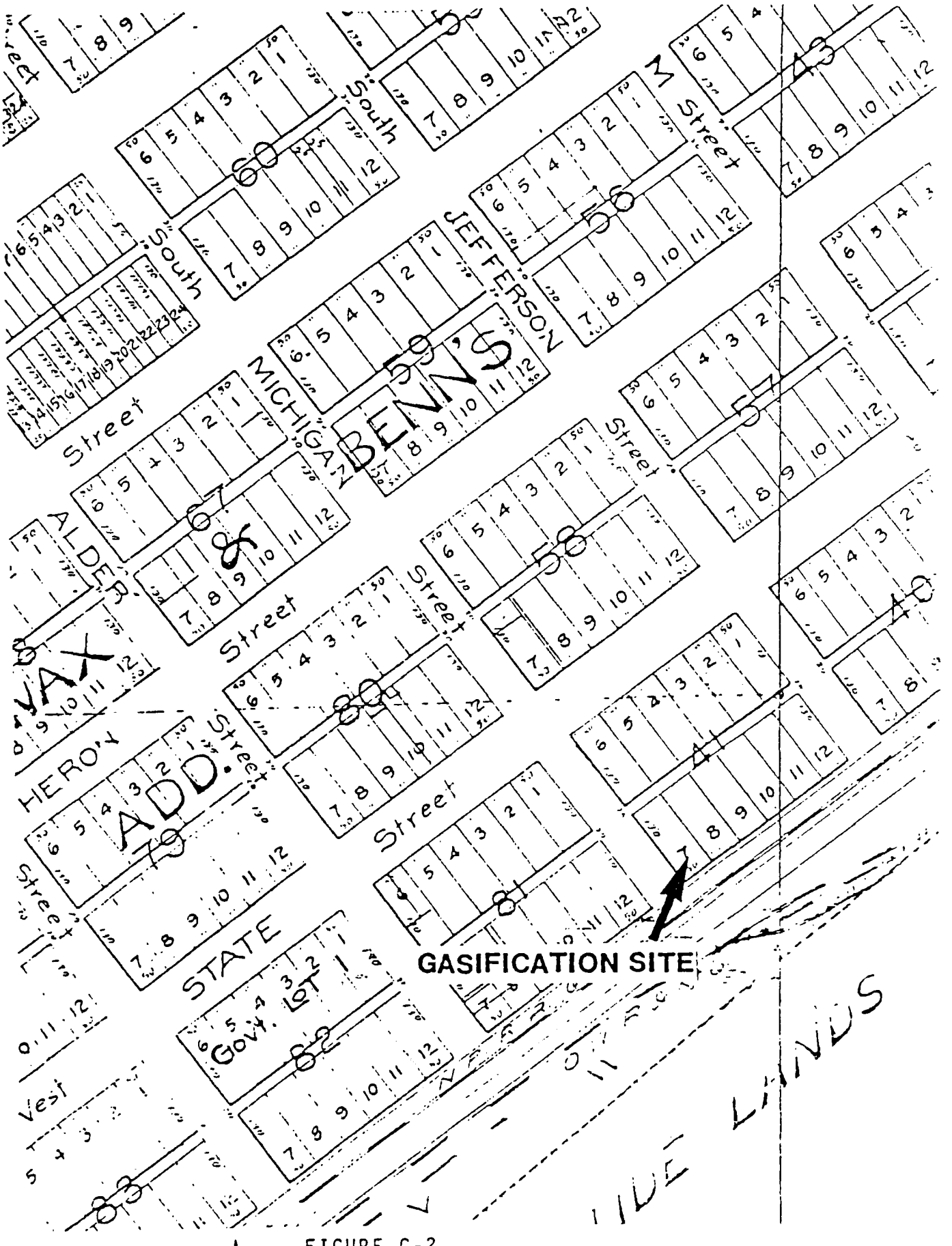

FIGURE C-2
WEATHERWAX AND BENNS SECOND ADDITION TO ABERDEEN
Aberdeen, Washington
Grays Harbor County Plat Map
Scale Unknown

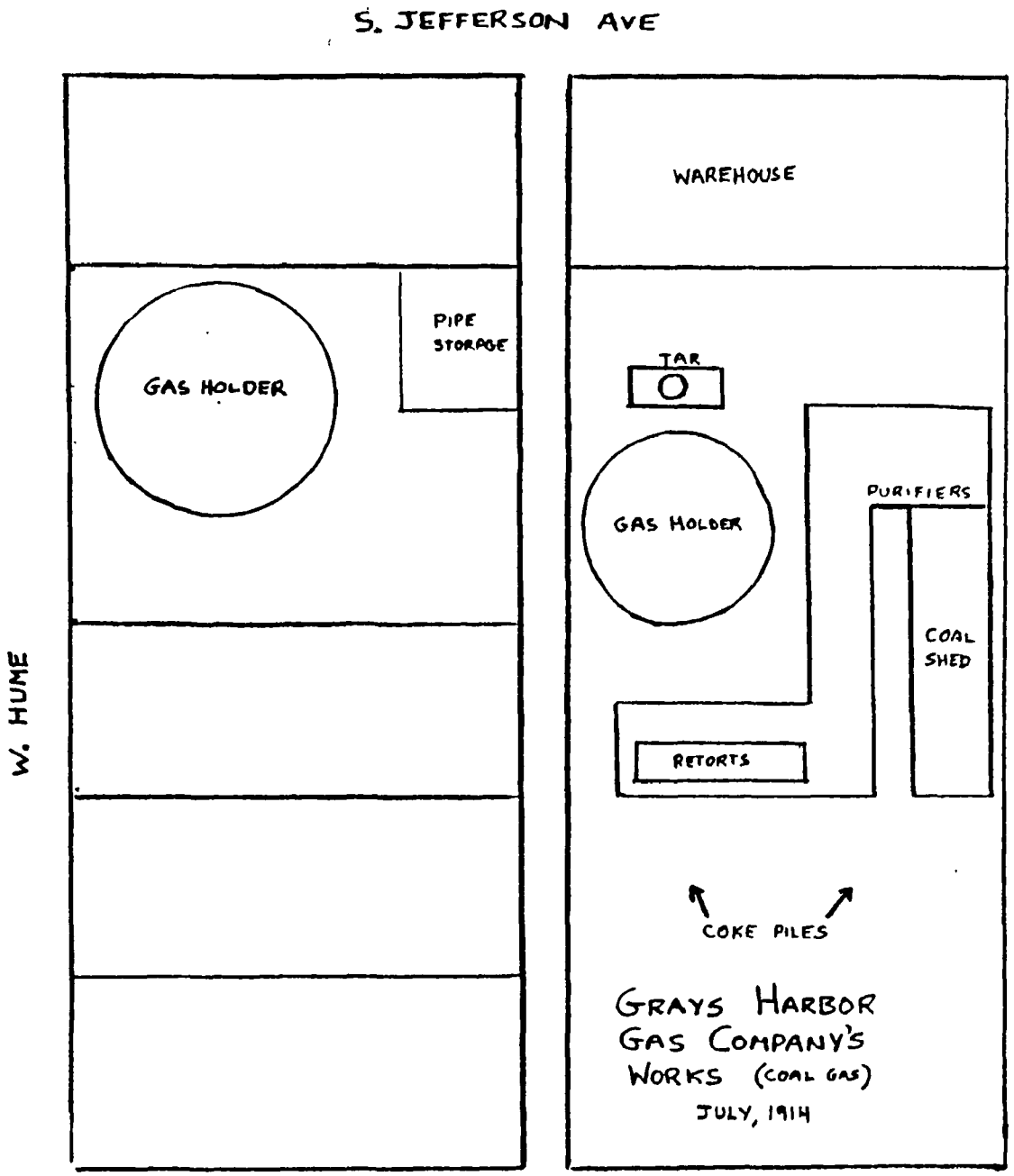

FIGURE C-3
GRAYS HARBOR GAS CO.
Aberdeen, Washington
Sketch from Sanborn Fire Insurance Map, 1914

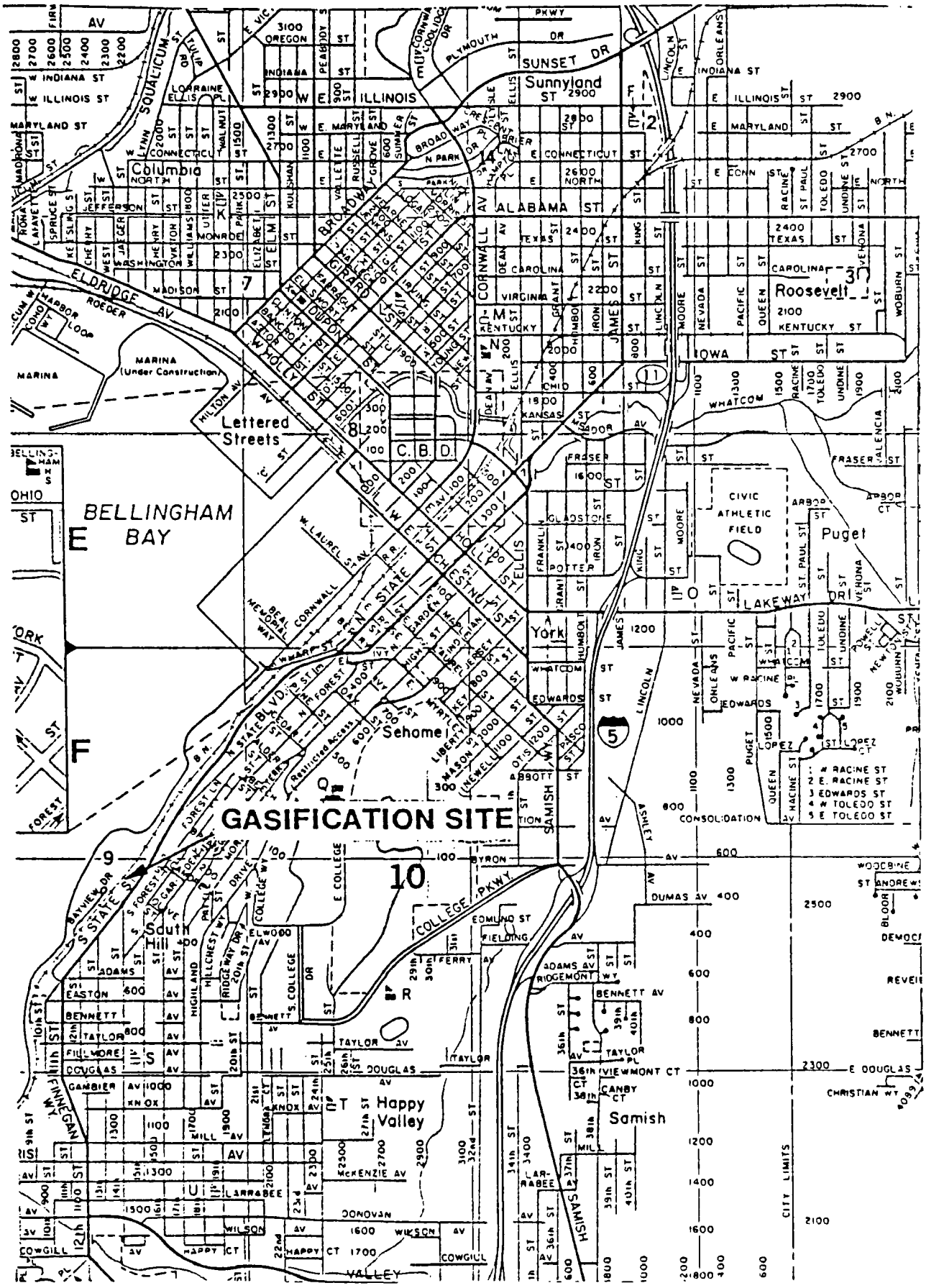

FIGURE C-4
BELLINGHAM GAS MANUFACTURING SITE
Bellingham, Washington
Scale: 1 mile = 2½"

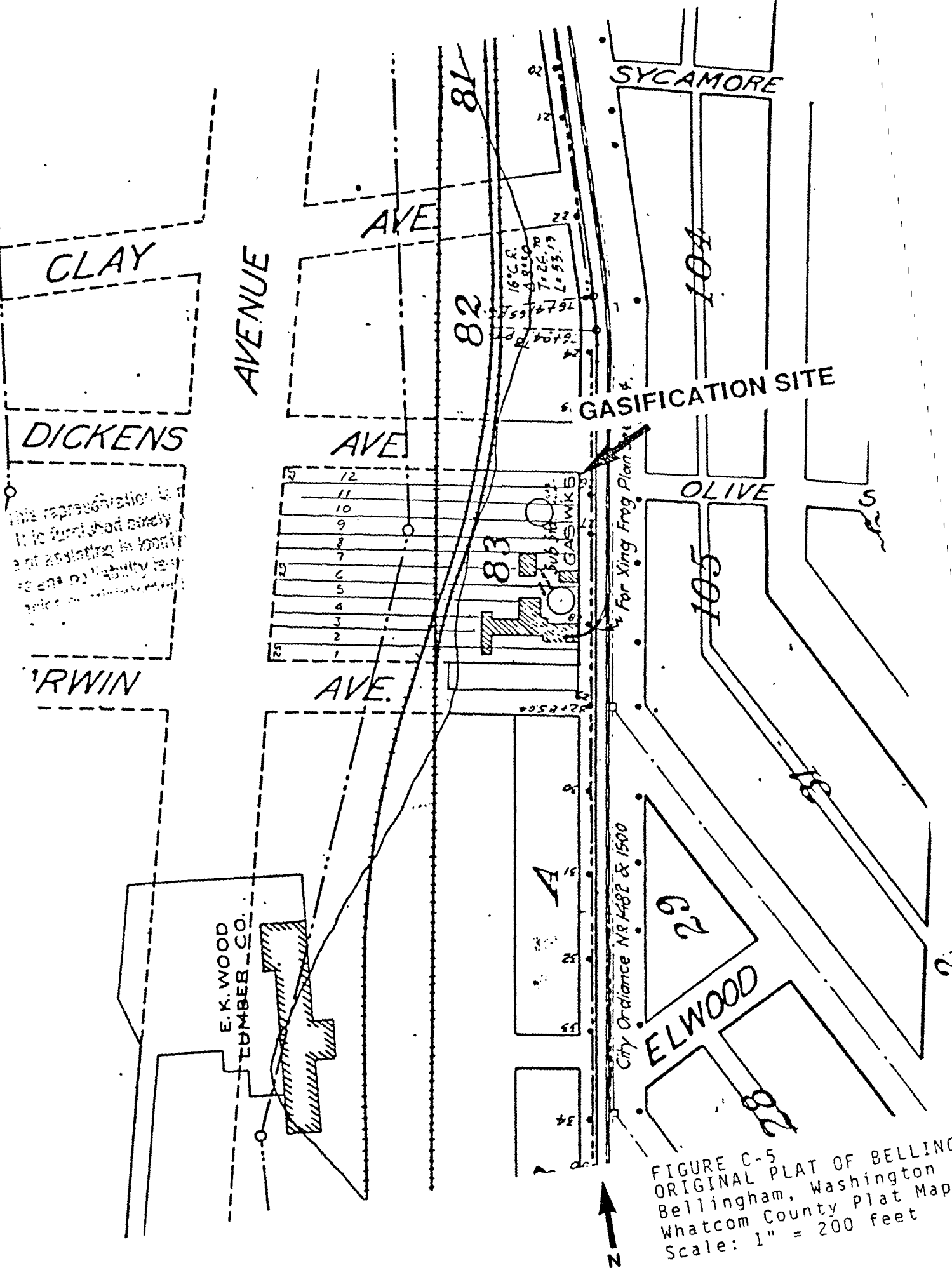

FIGURE C-5
ORIGINAL PLAT OF BELLING
Bellingham, Washington
Whatcom County Plat Map
Scale: 1" = 200 feet

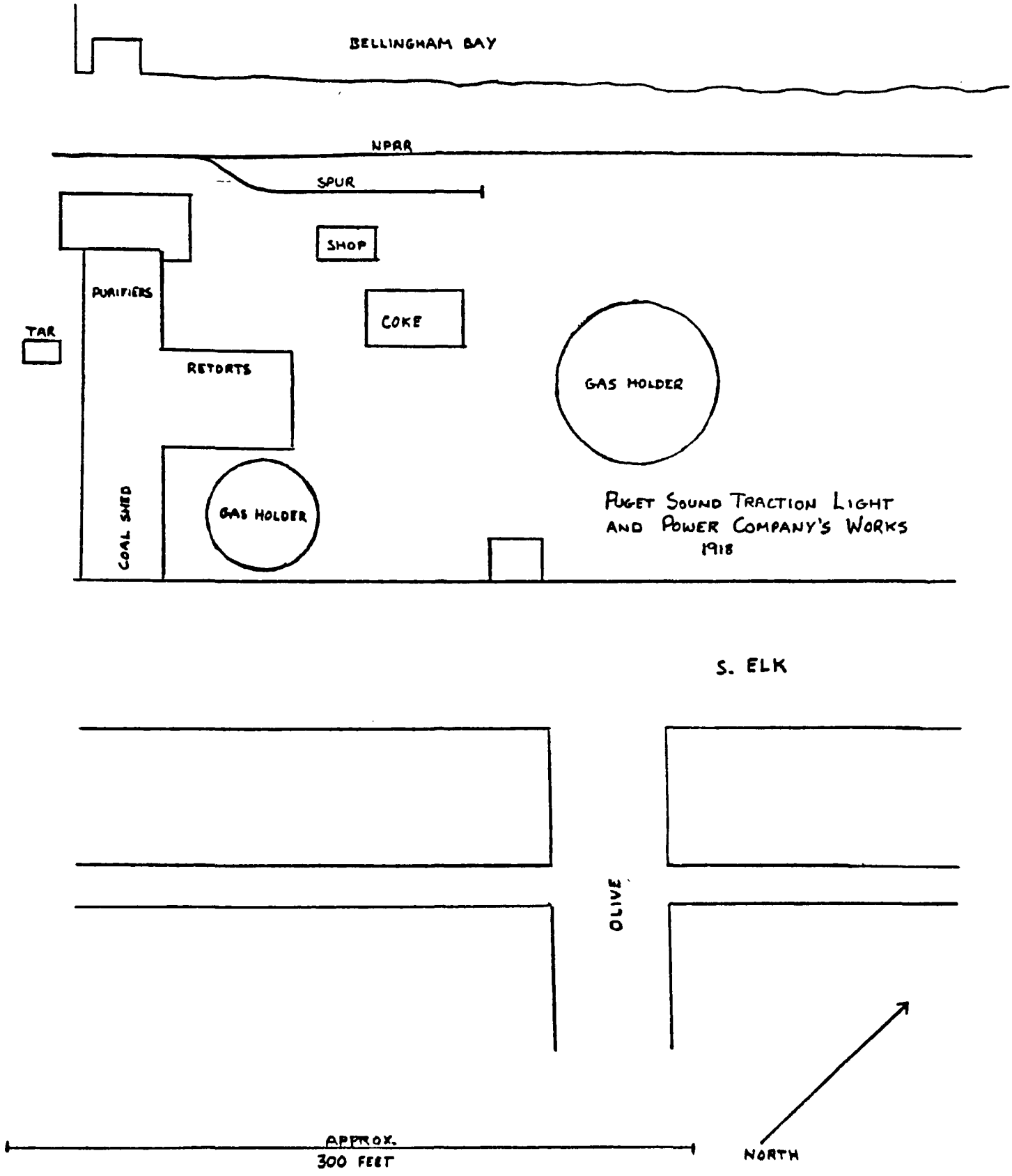

FIGURE C-6
PUGET SOUND TRACTION LIGHT AND POWER CO.
Bellingham, Washington
Sketch from Sanborn Fire Insurance Map, 1918

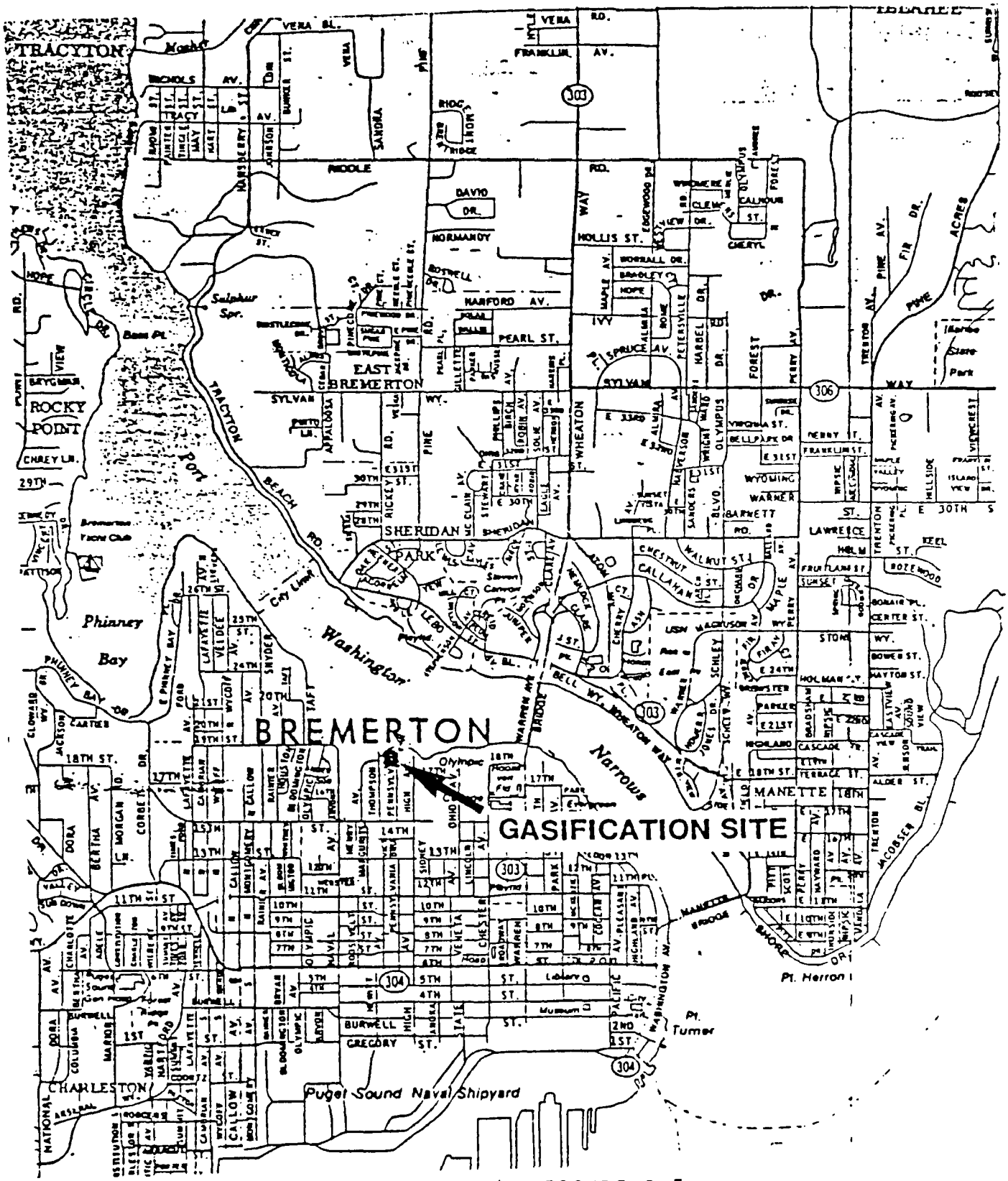

FIGURE C-7
BREMERTON GAS MANUFACTURING SITE
Bremerton, Washington
Scale Unknown

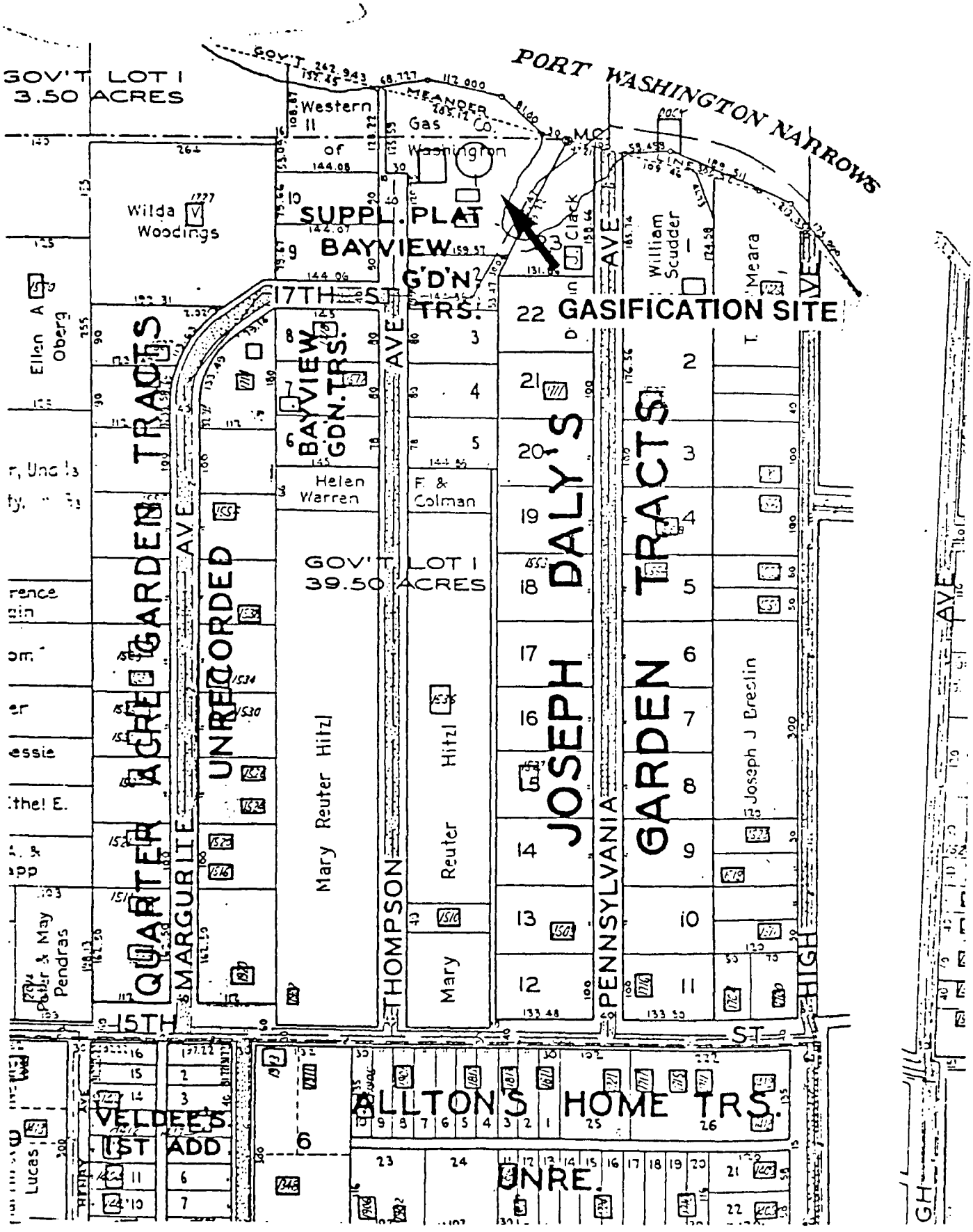

FIGURE C-8
BAYVIEW GARDEN TRACTS
Bremerton, Washington
Kroll Map, Date Unavailable
Scale Unknown

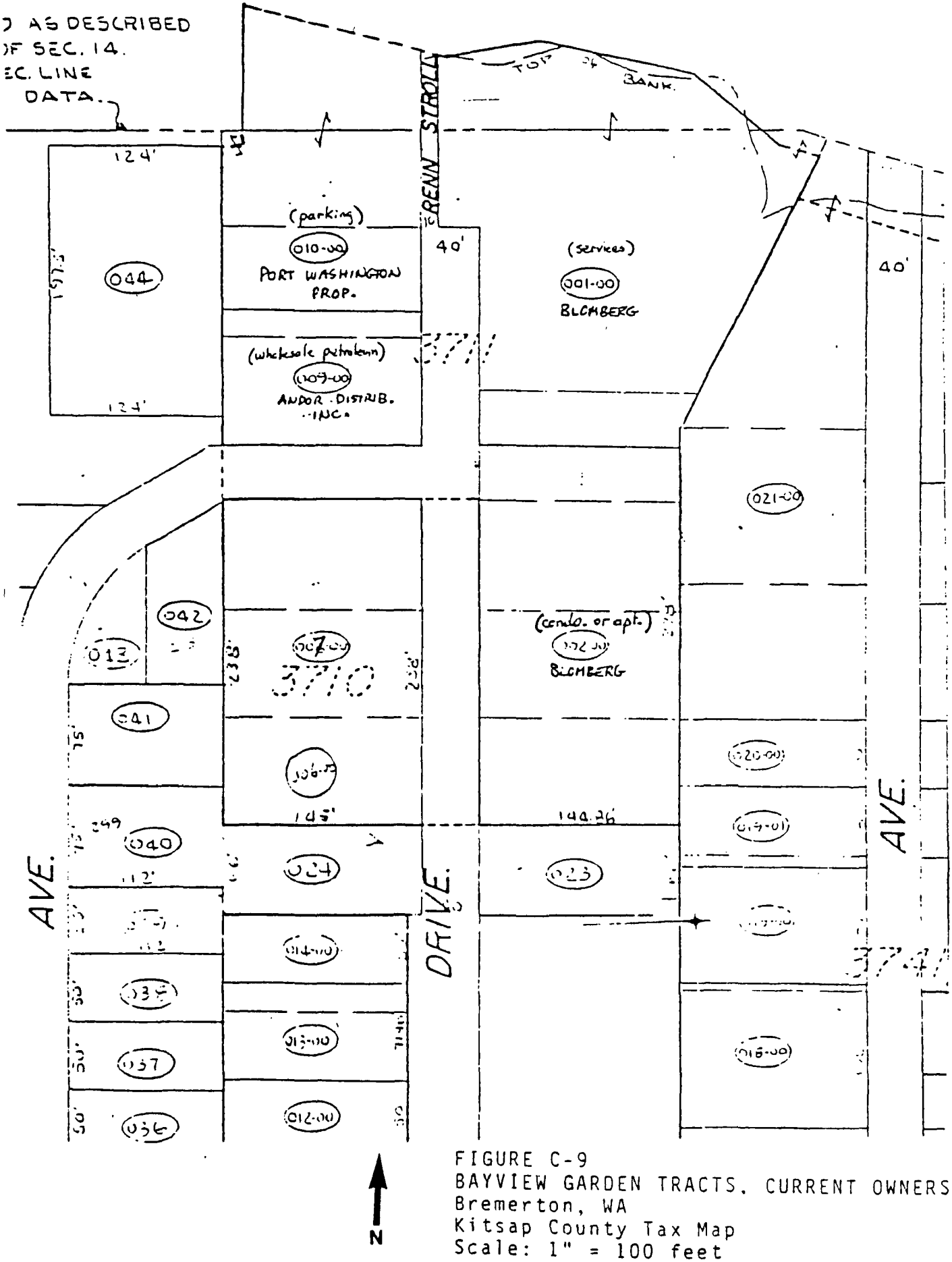

FIGURE C-9
BAYVIEW GARDEN TRACTS, CURRENT OWNERS
Bremerton, WA
Kitsap County Tax Map
Scale: 1" = 100 feet

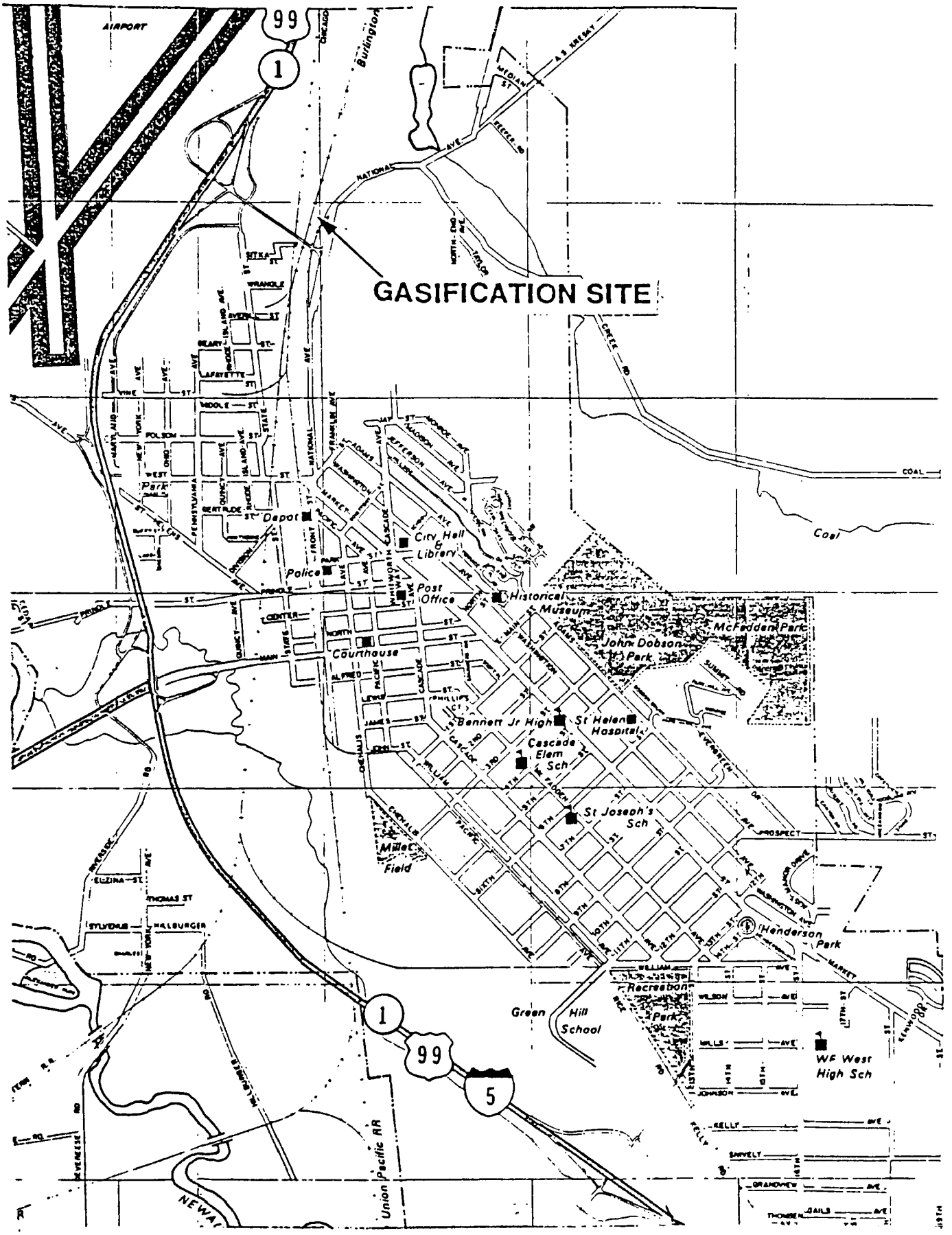

FIGURE C-10
CHEHALIS GAS MANUFACTURING SITE
Chehalis, Washington
Scale: 1 mile = 3.5 inches

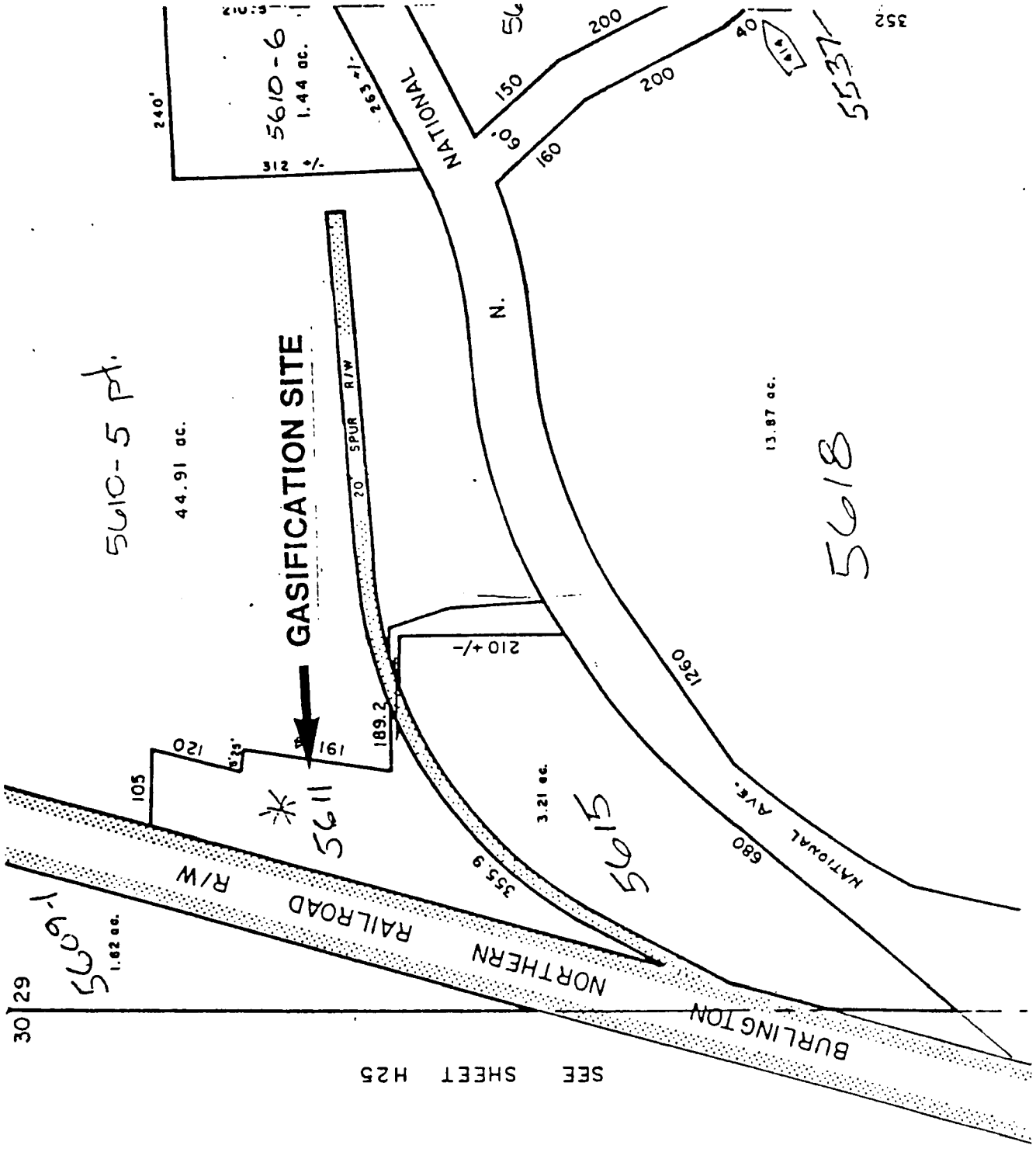

FIGURE C-11
CHEHALIS GAS MANUFACTURING SITE
Chehalis, Washington
Lewis County Tax Map
Scale Unknown

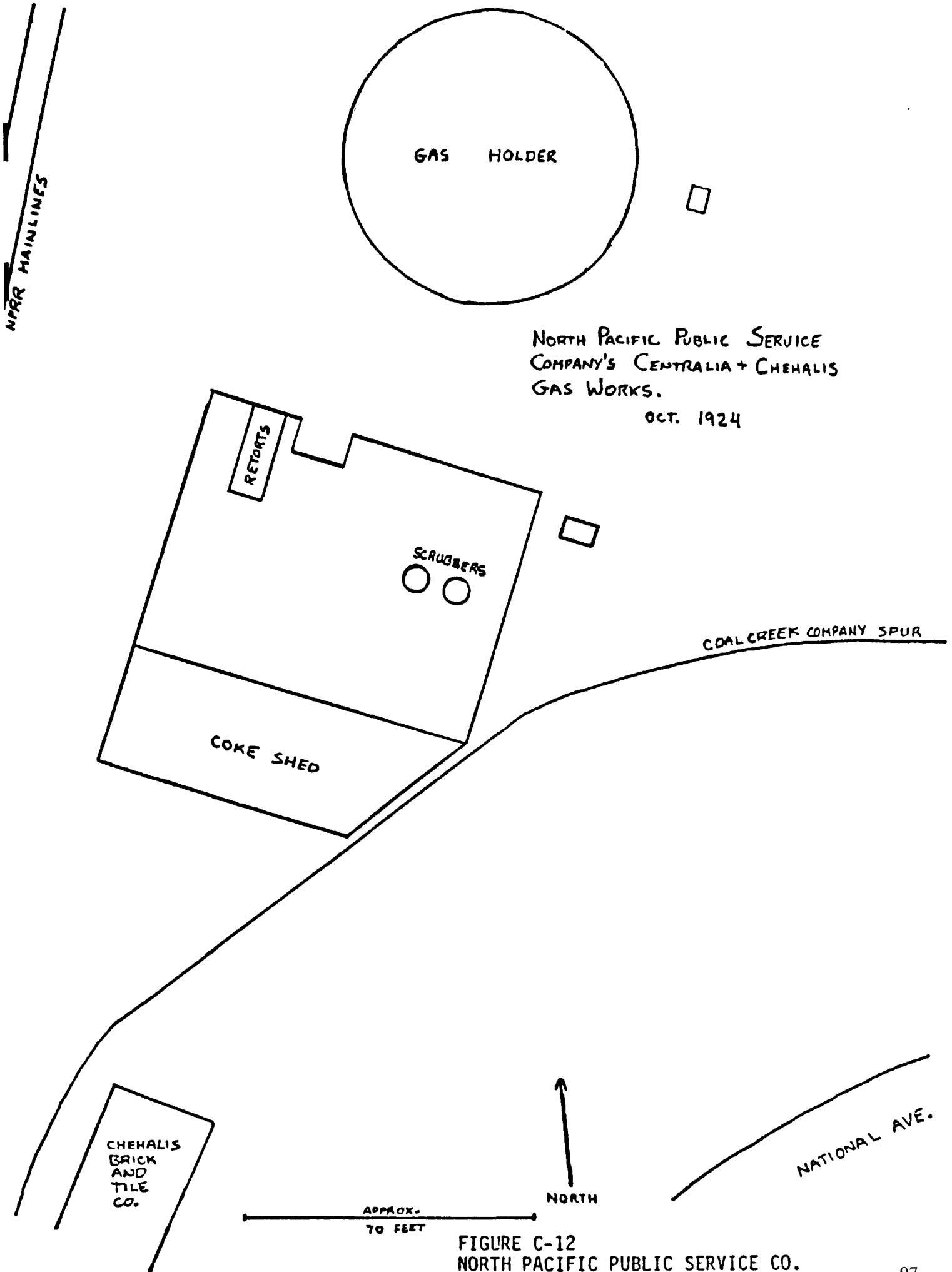

FIGURE C-12
NORTH PACIFIC PUBLIC SERVICE CO.
Chehalis, Washington

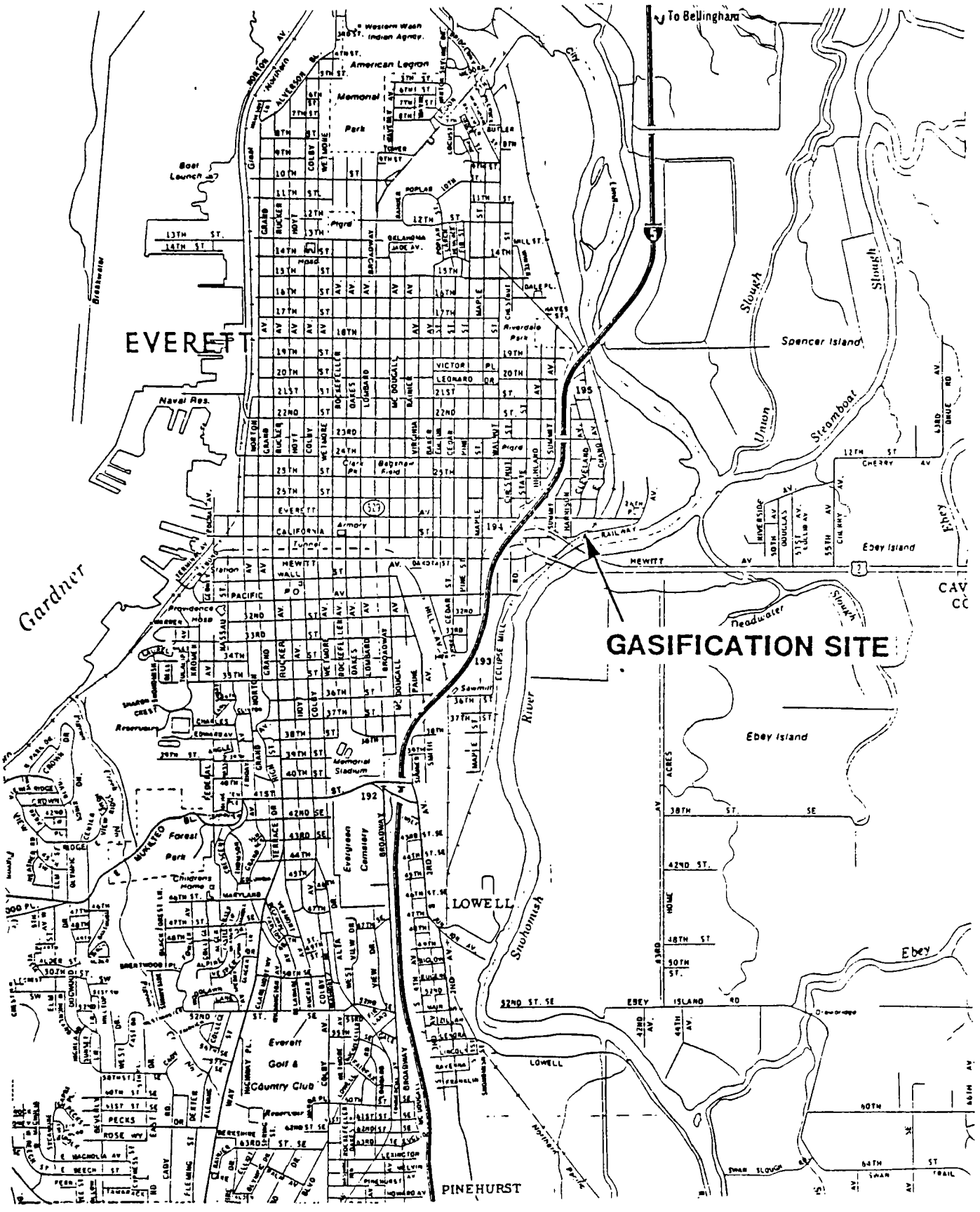

FIGURE C-13
EVERETT GAS MANUFACTURING SITE
Everett, Washington
Scale: 1 mile = 1 1/8"

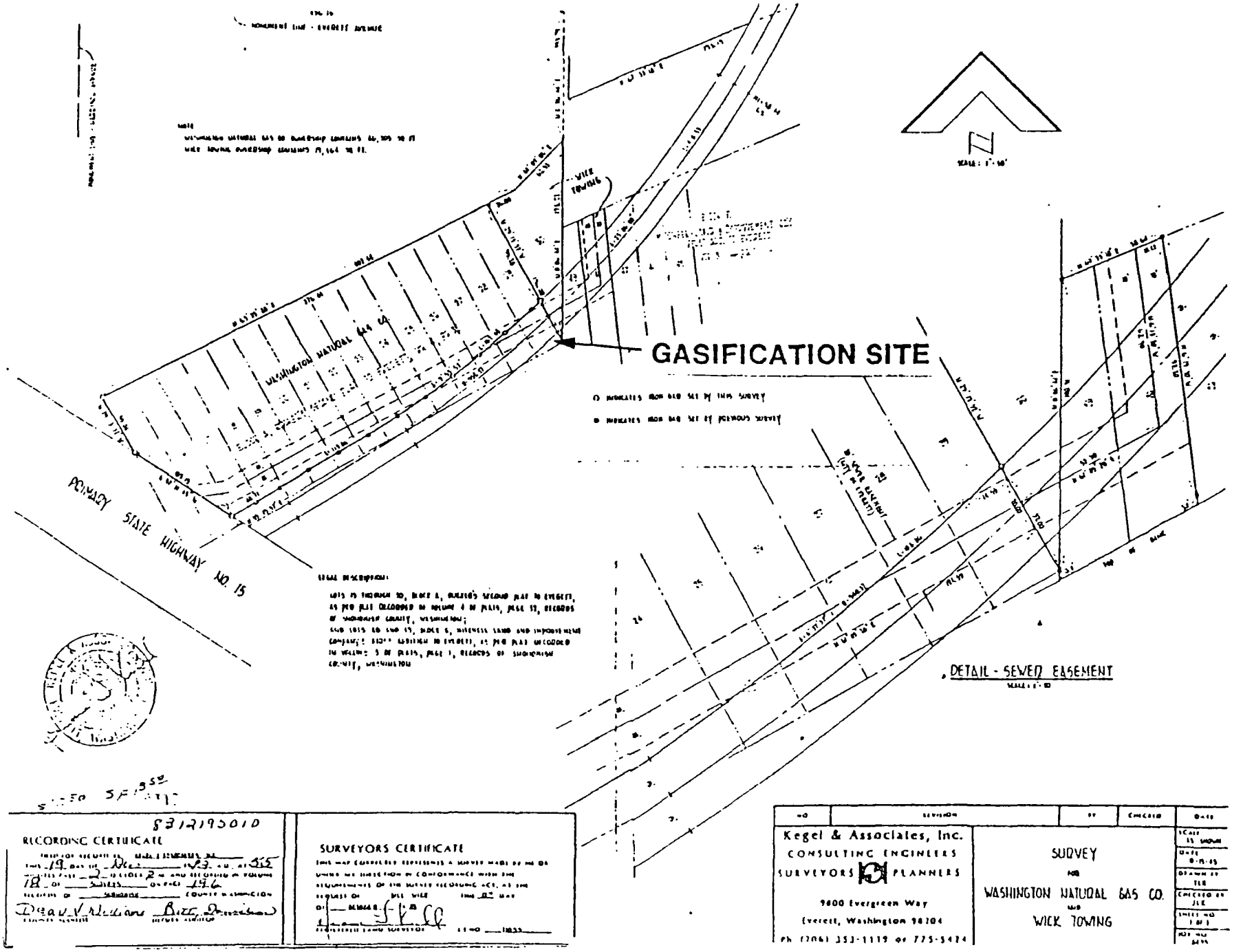

FIGURE C-14
RUCKER"S SECOND ADDITION TO EVERETT
Everett, Washington
Snohomish County Plat Map
Scale: 1" = 20 feet

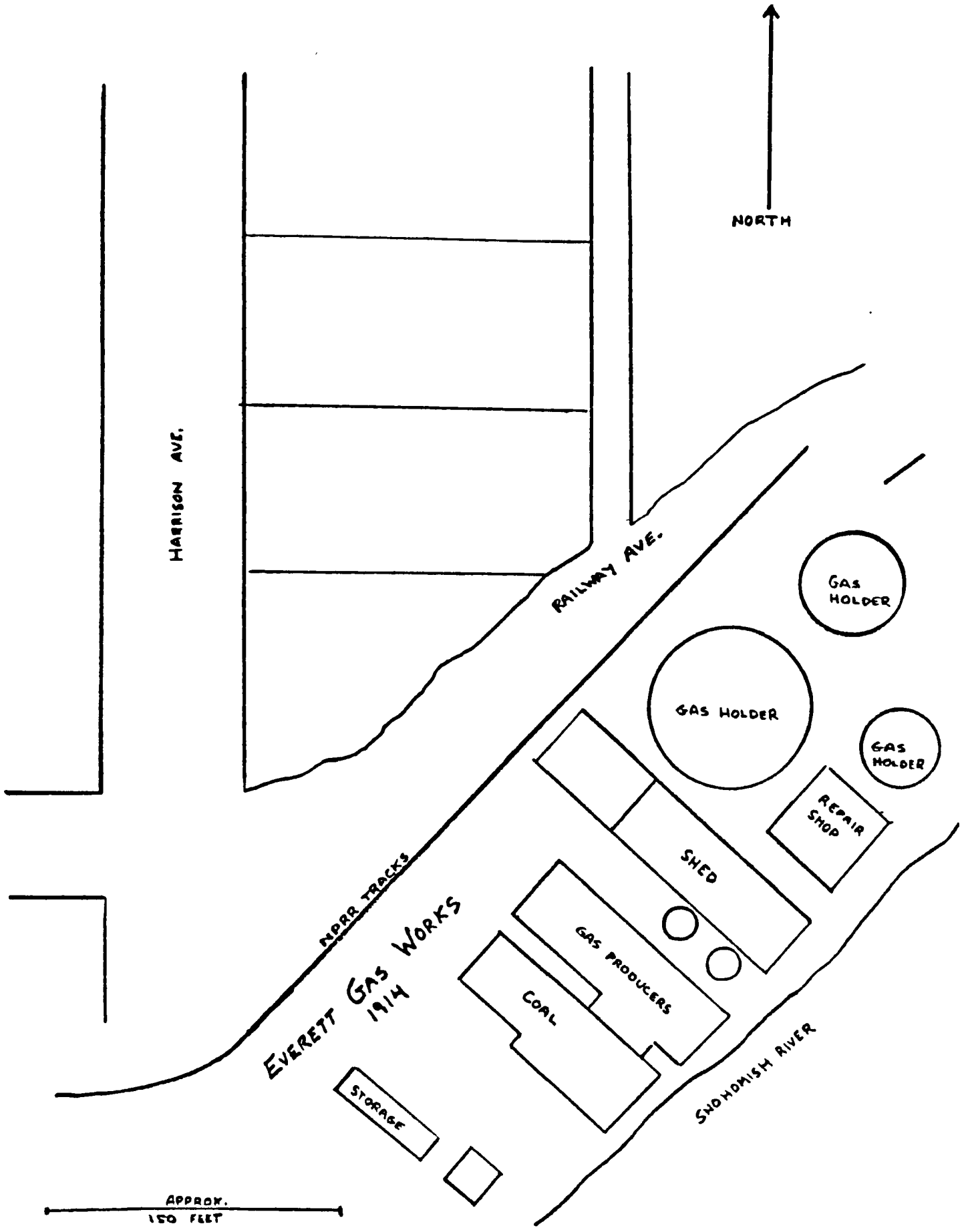

FIGURE C-15
EVERETT GAS CO.
Everett, Washington
Sketch from Sanborn Fire Insurance Map. 1914

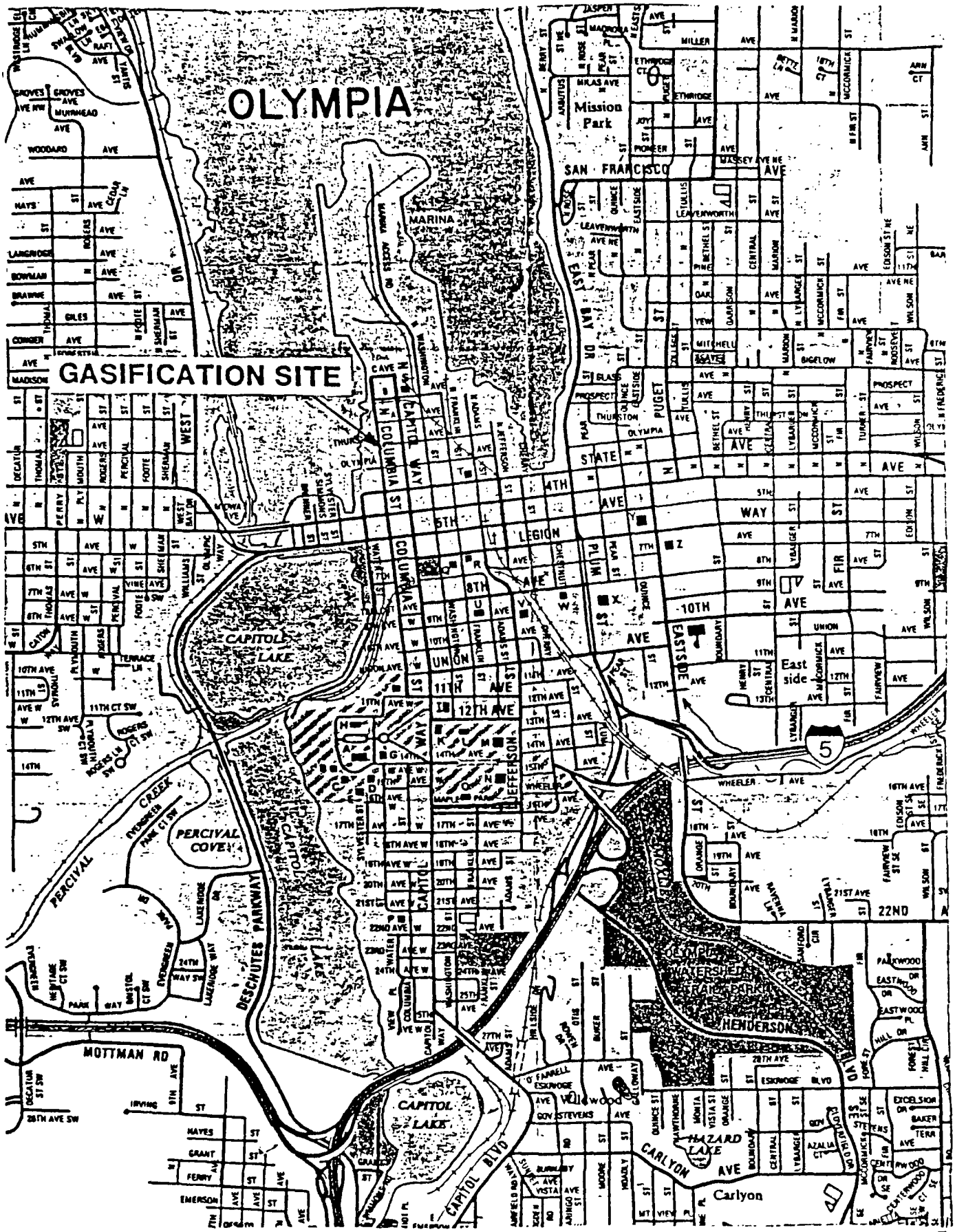

FIGURE C-16
OLYMPIA GAS MANUFACTURING SITE
Olympia, Washington
Scale: 1 mile = 2 7/8 inches

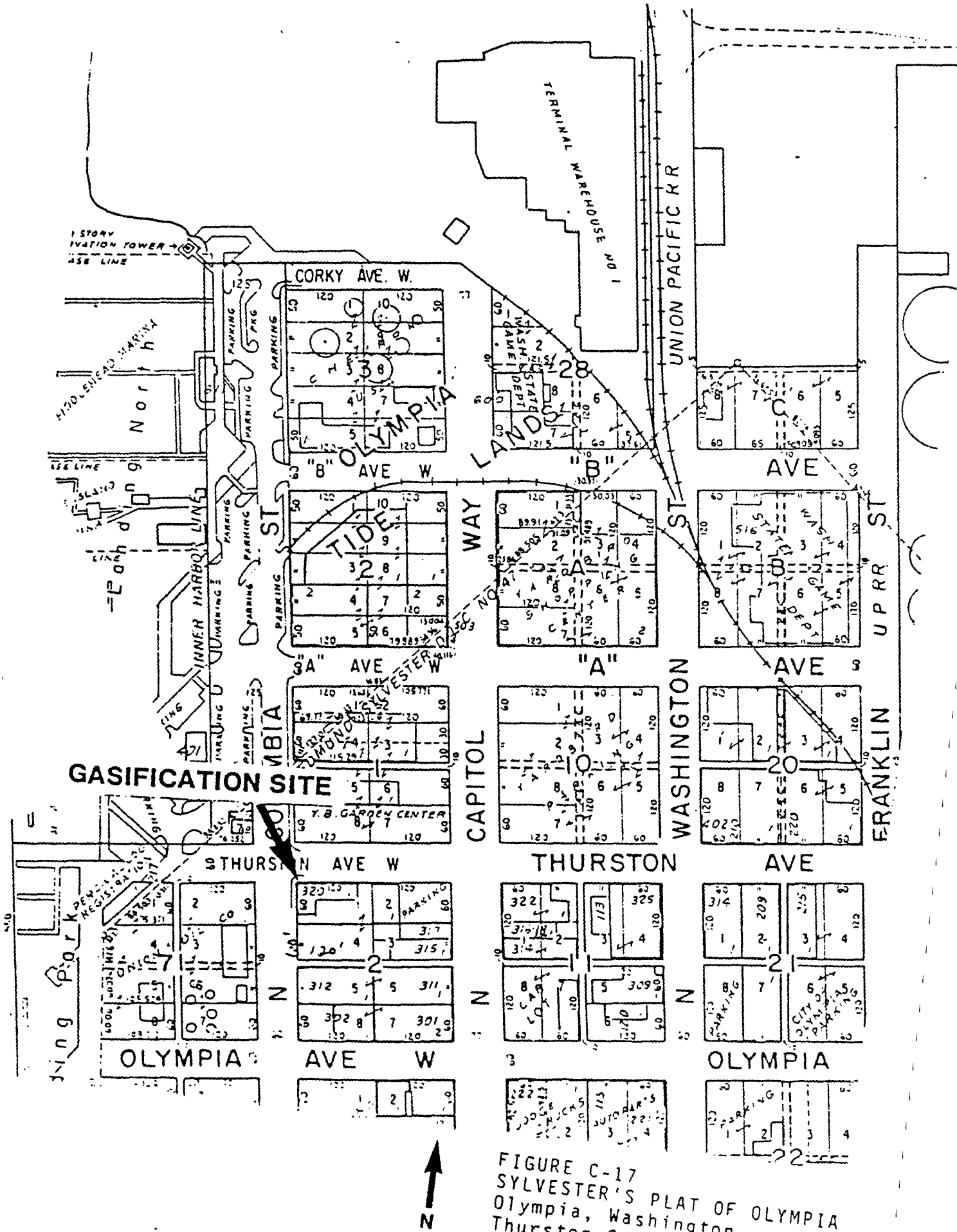

FIGURE C-17
SYLVESTER'S PLAT OF OLYMPIA
Olympia, Washington
Thurston County Plat Map
Scale Unknown

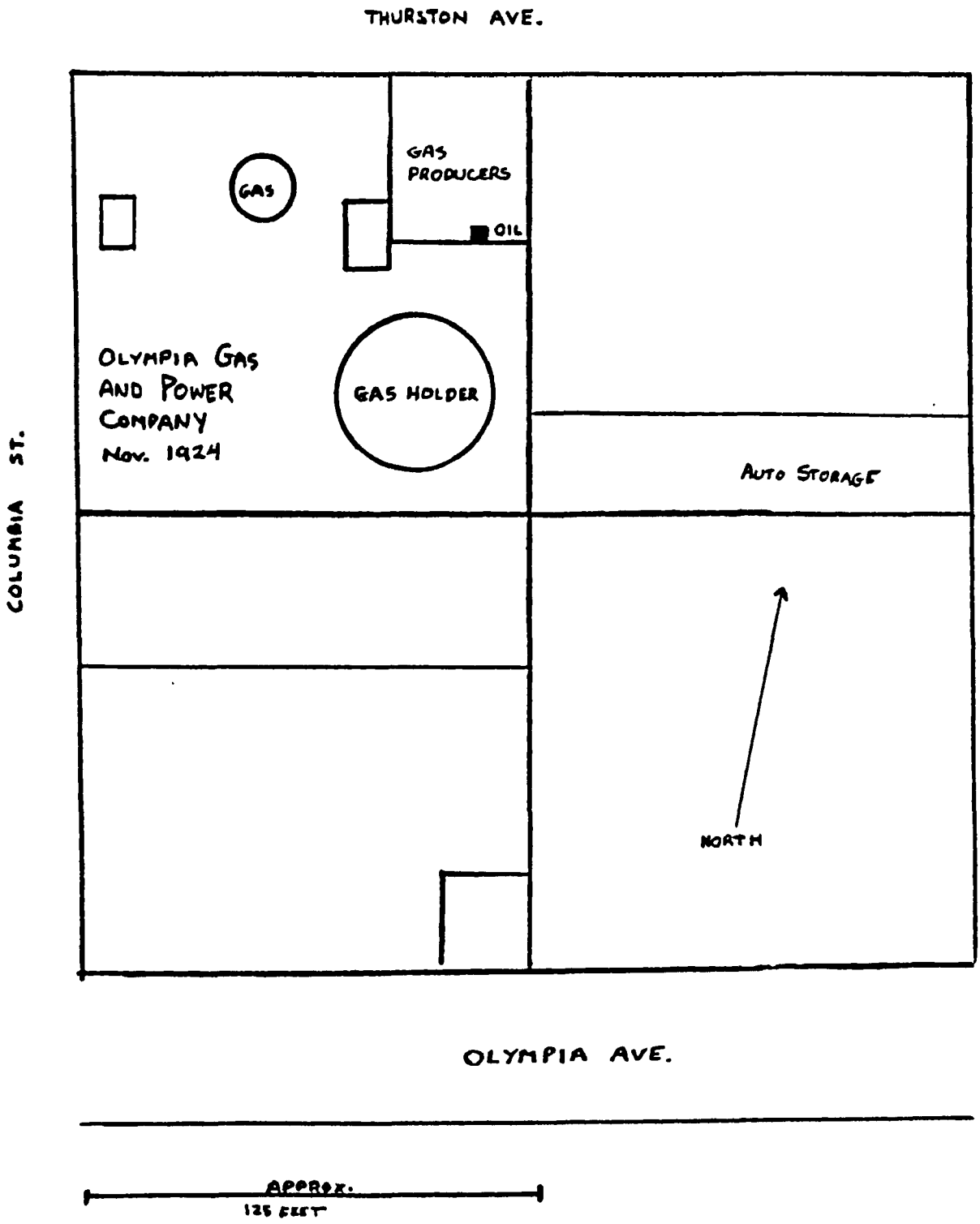

FIGURE C-18
OLYMPIA GAS AND POWER CO.
Olympia, Washington
Sketch from Sanborn Fire Insurance Map, 1924

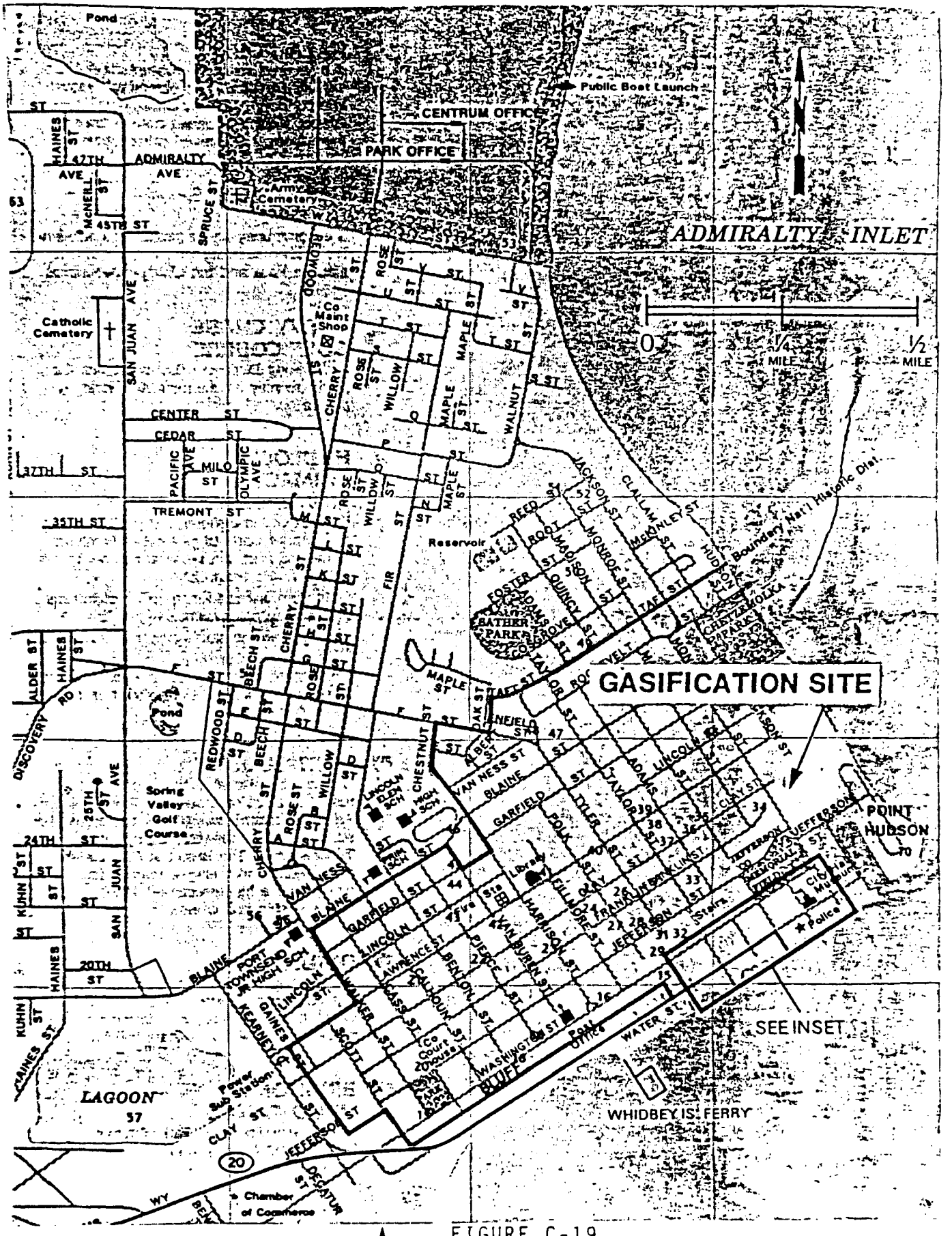

FIGURE C-19
PORT TOWNSEND GAS MANUFACTURING SITE
Port Townsend, Washington
Scale: 1" = ¼ mile

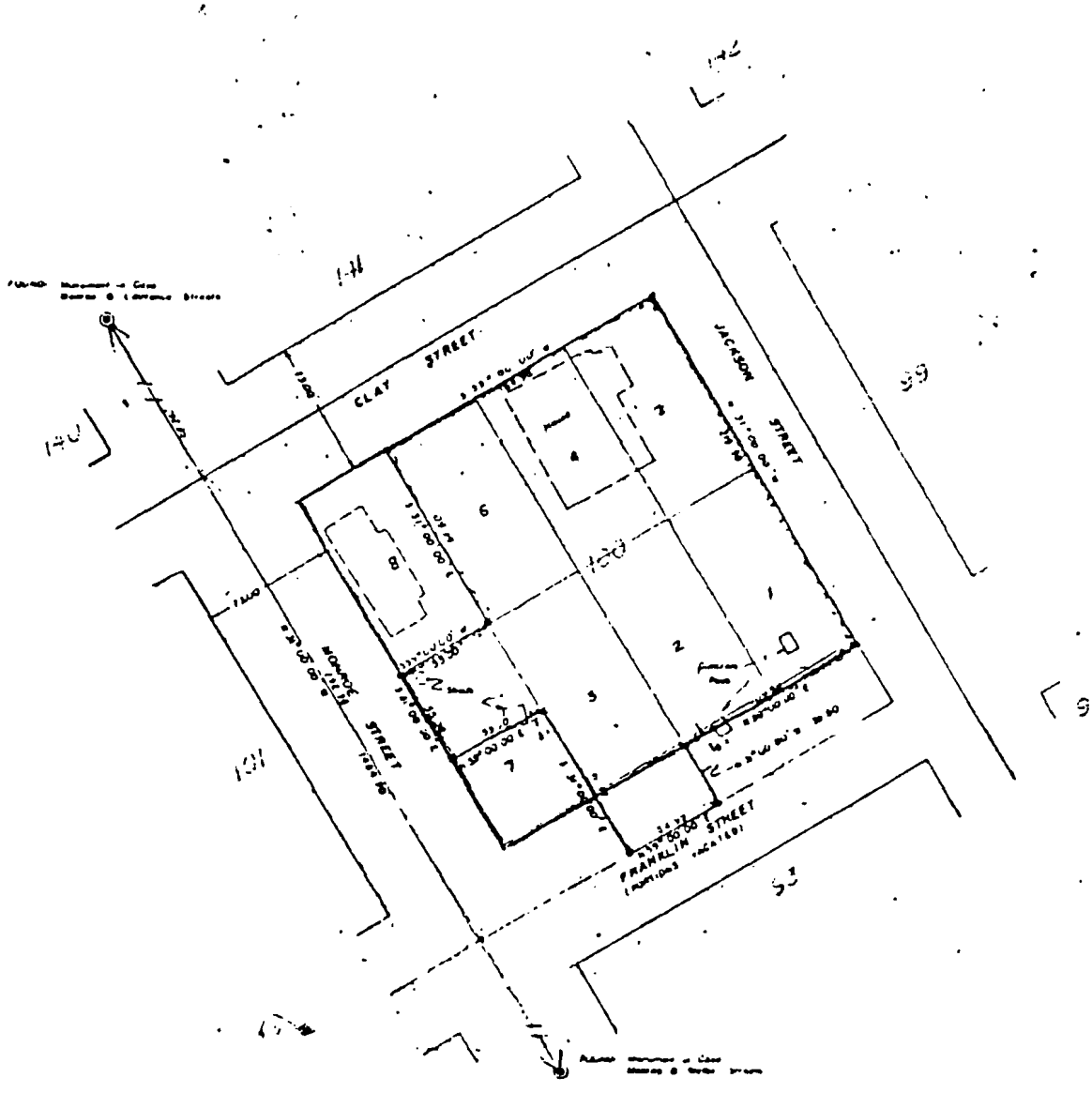

FIGURE C-20
ORIGINAL PLAT OF PORT TOWNSEND
Port Townsend, Washington
Scale: 1" = 150 feet

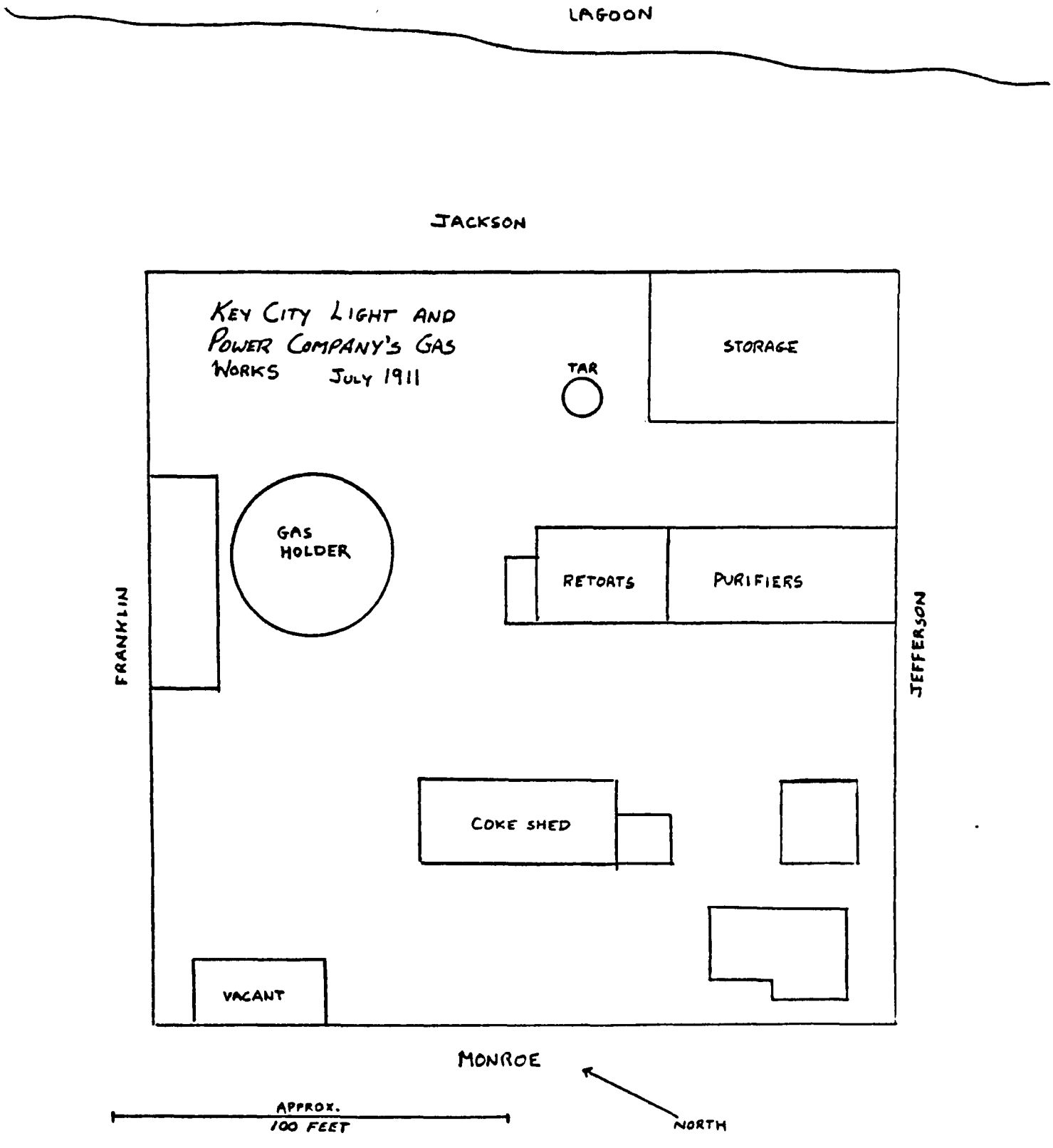

FIGURE C-21
KEY CITY LIGHT AND POWER CO.
Port Townsend, Washington
Sketch from Sanborn Fire Insurance Map, 1911

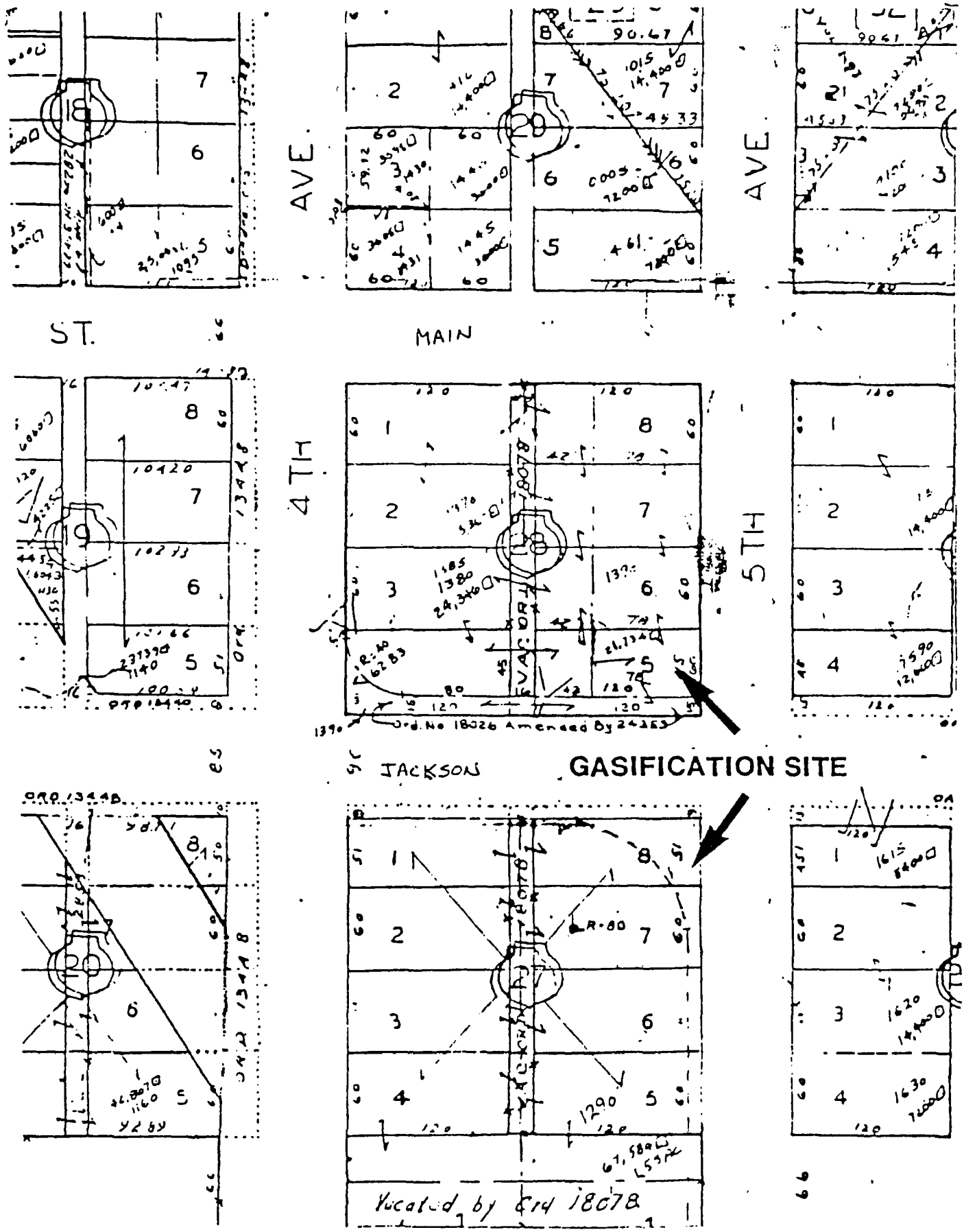

FIGURE C-22
MAYNARD'S PLAT OF SEATTLE
Seattle, Washington
King County Plat Map
Scale Unknown

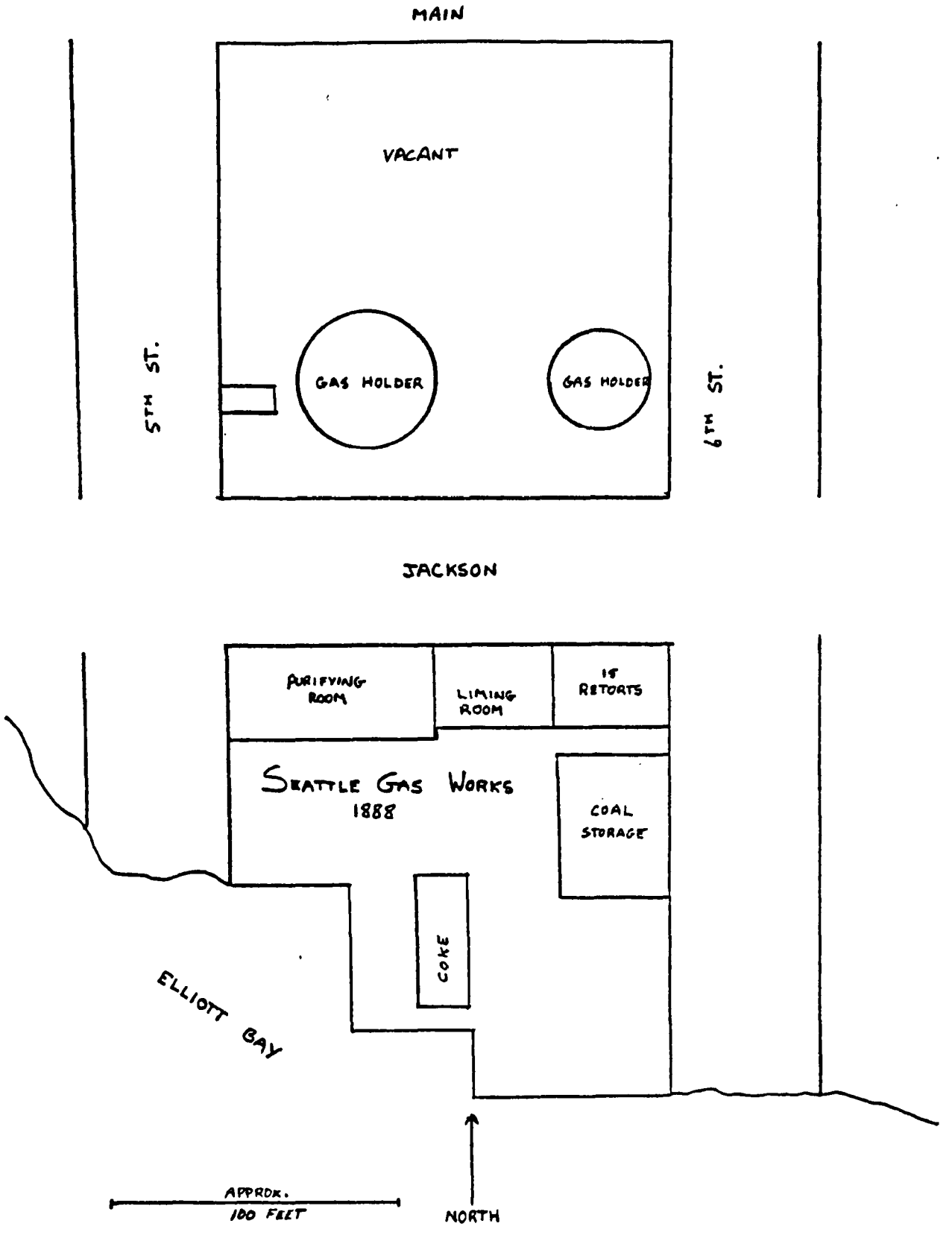

FIGURE C-23
SEATTLE GAS LIGHT CO.
Seattle, Washington
Sketch from Sanborn Fire Insurance Map, 1888

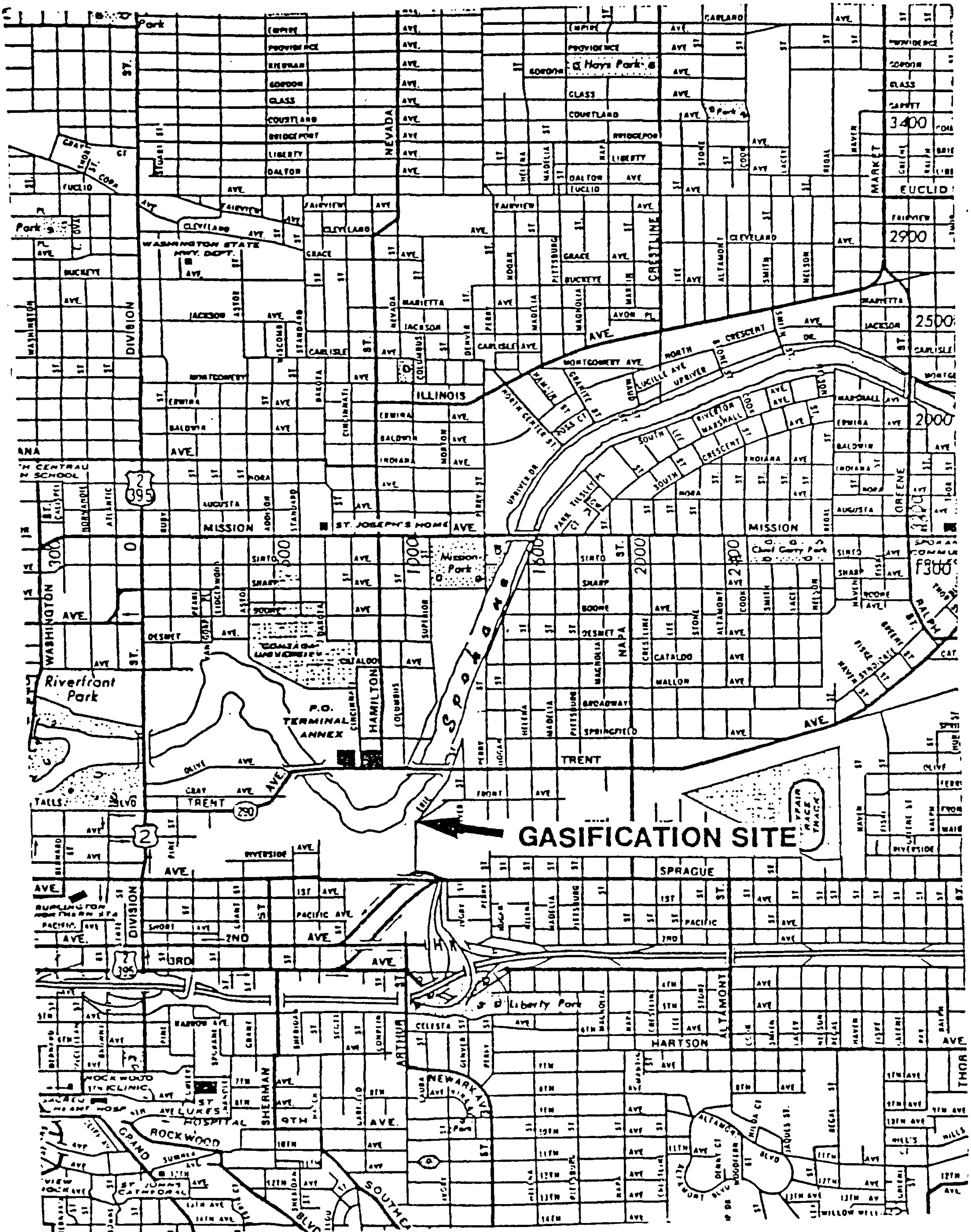

FIGURE C-24
SPOKANE GAS MANUFACTURING SITE
Spokane, Washington
Scale Unknown

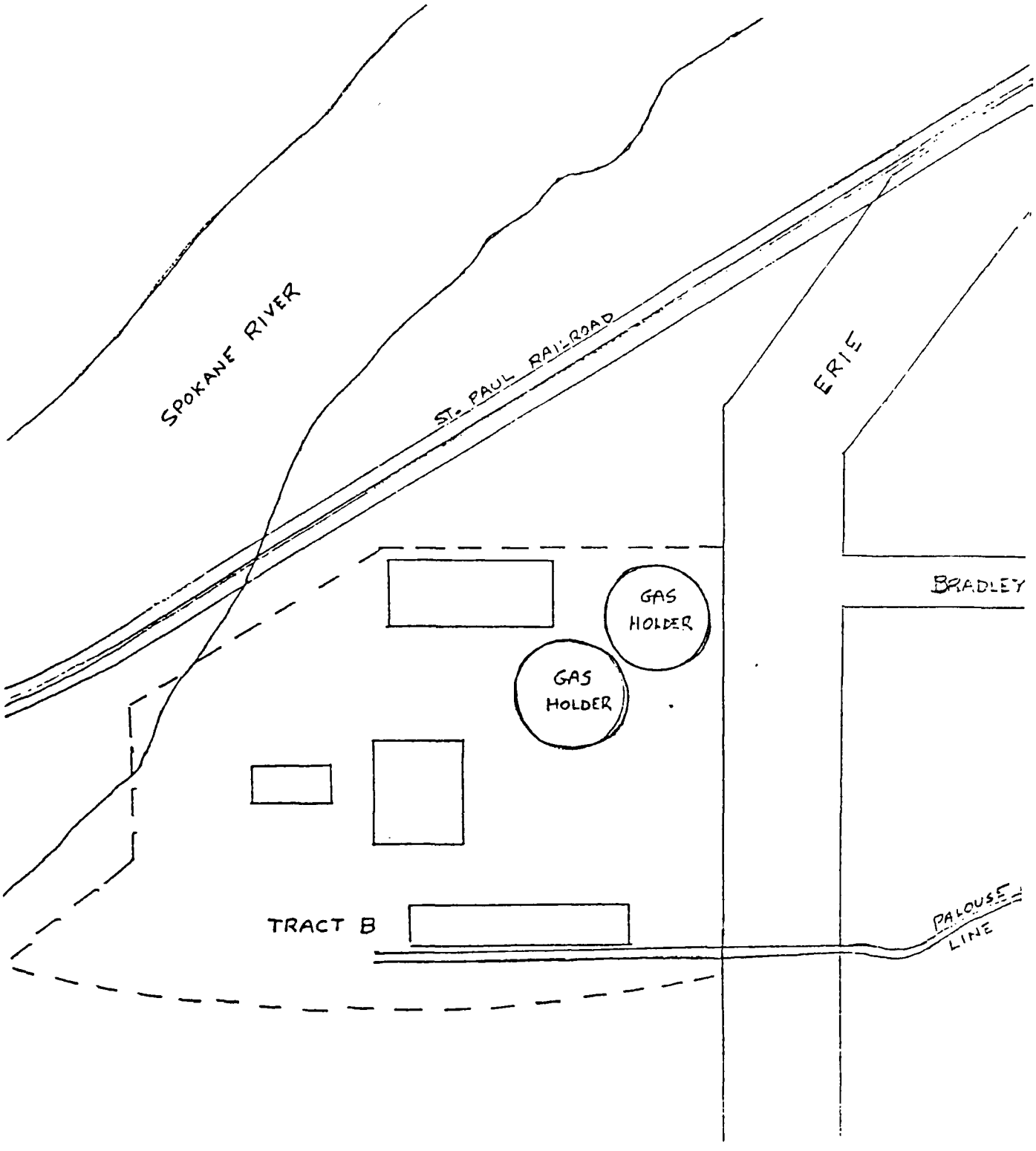

FIGURE C-25
DENNIS AND BRADLEY'S ADDITION TO SPOKANE
Spokane, Washington
Sketch from Spokane County Plat Map, Date Unavailable
Scale: 1" = 93 feet

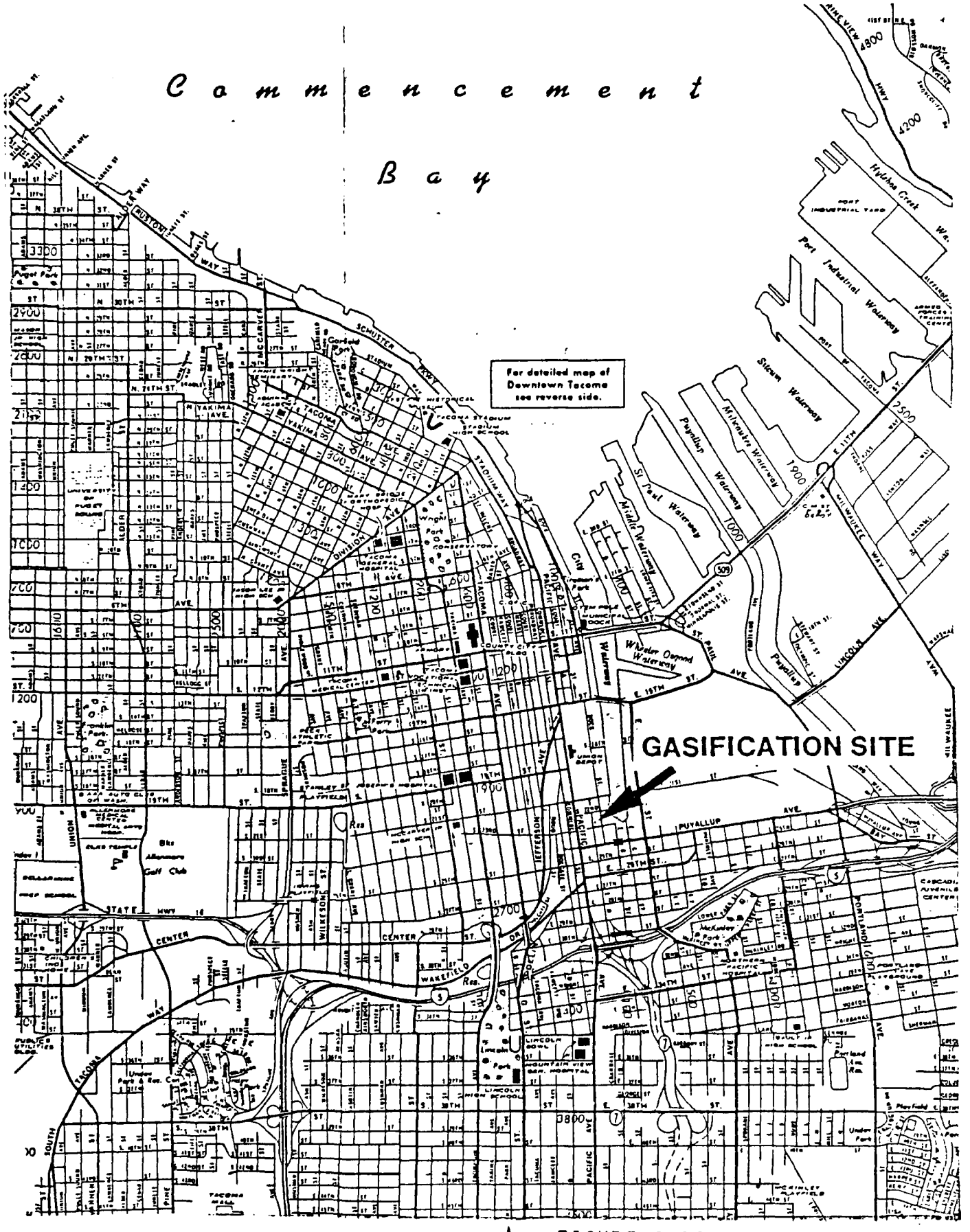

FIGURE C-26
TACOMA GAS MANUFACTURING SITE
Tacoma, Washington
Scale: 1 mile = 1 3/4"

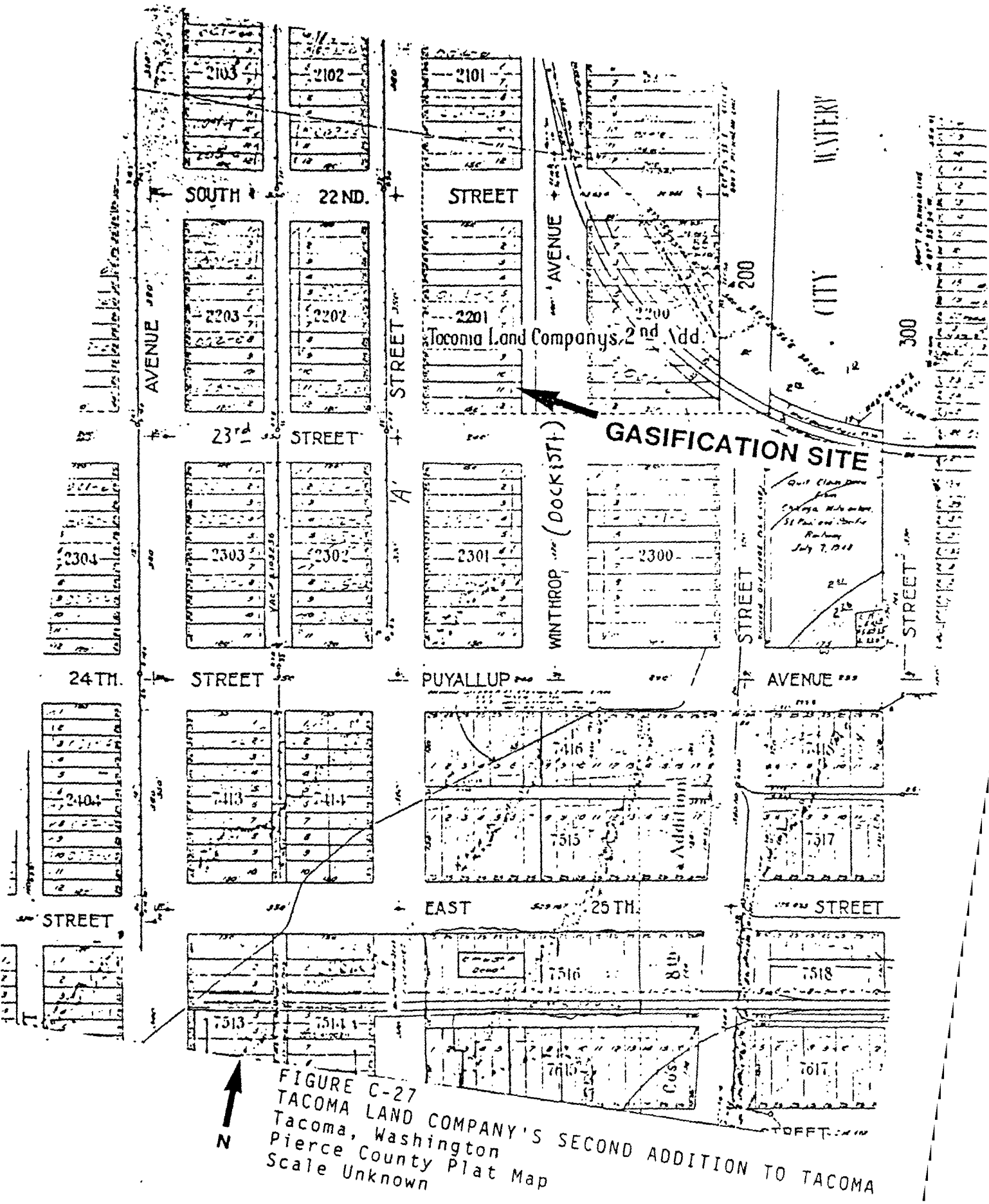

FIGURE C-27
TACOMA LAND COMPANY'S SECOND ADDITION TO TACOMA
Tacoma, Washington
Pierce County Plat Map
Scale Unknown

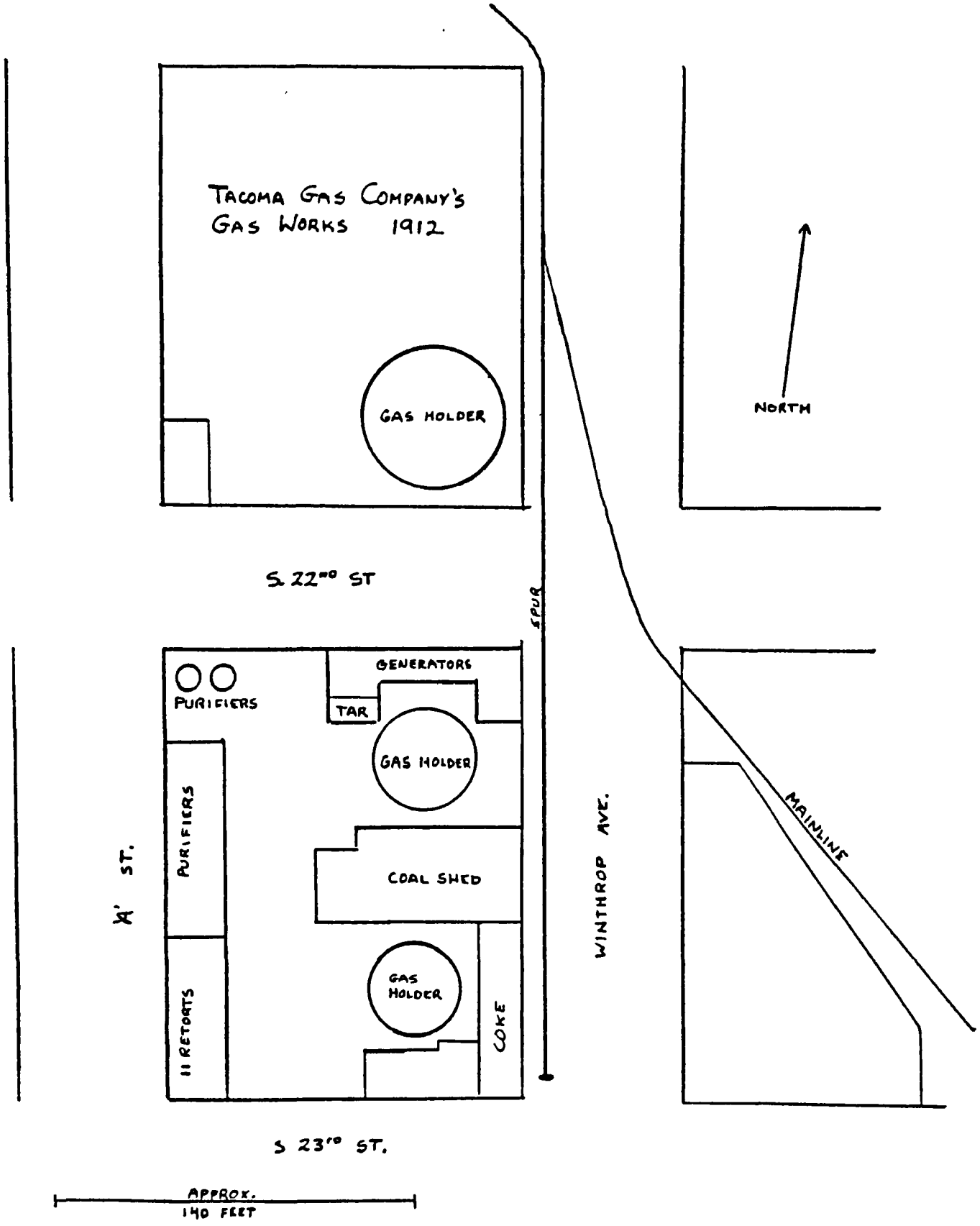

FIGURE C-28
TACOMA GAS CO.
Tacoma, Washington
Sketch from Sanborn Fire Insurance Map, 1912

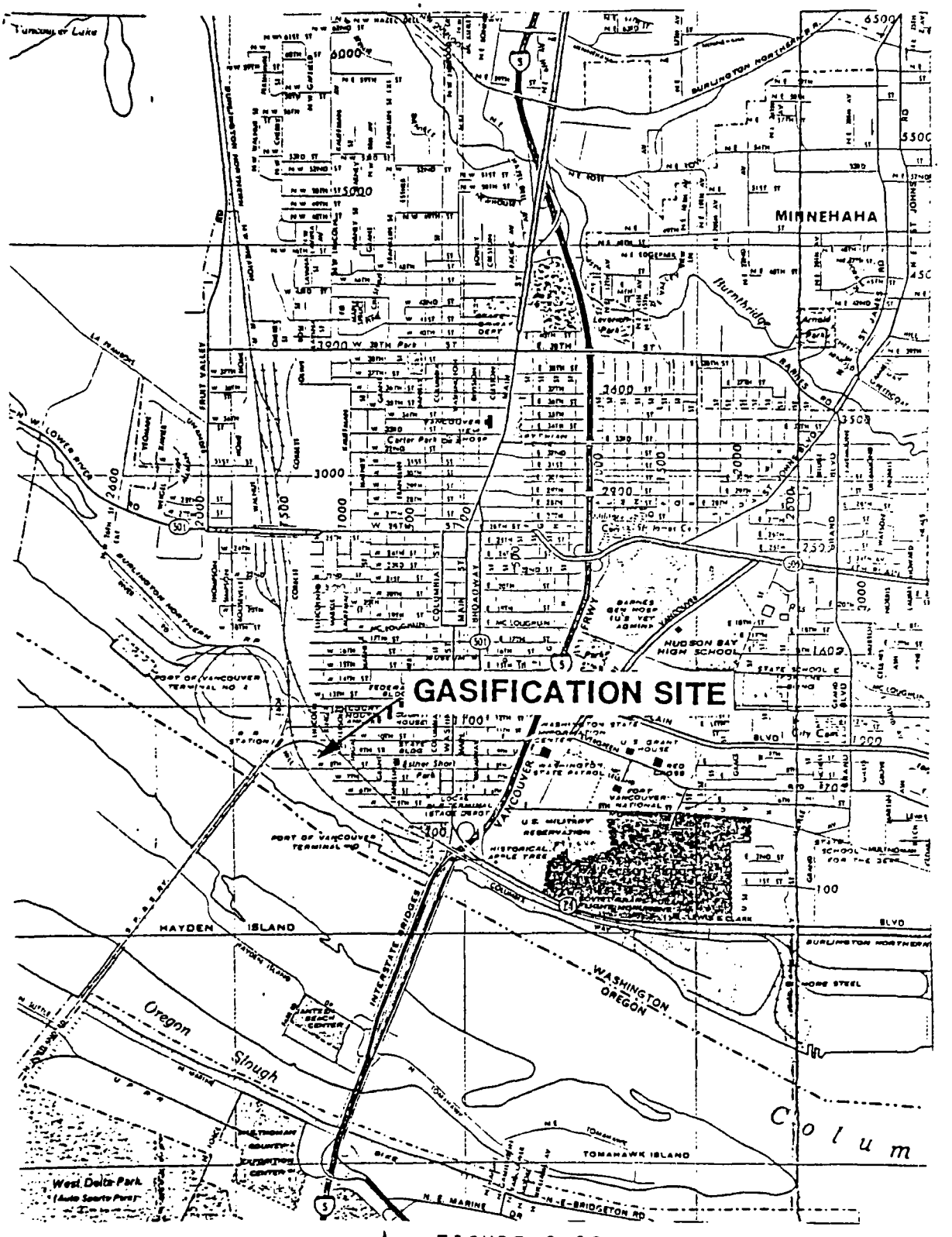

FIGURE C-29
VANCOUVER GAS MANUFACTURING SITE
Vancouver, Washington
Scale: 1 mile = 1 3/4"

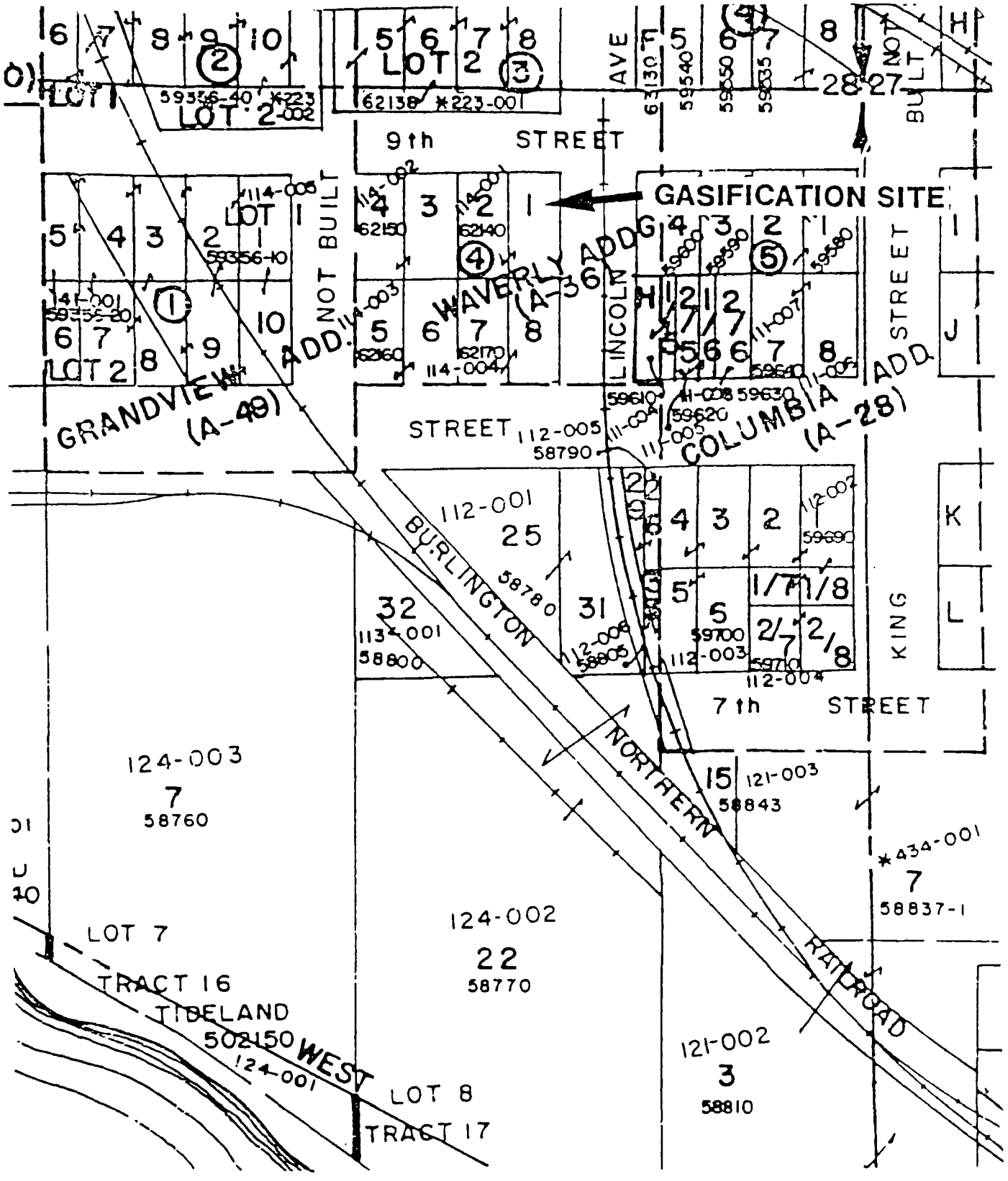

FIGURE C-30
WAVERLY ADDITION TO VANCOUVER
Vancouver, Washington
Cowlitz County Plat Map
Scale Unknown

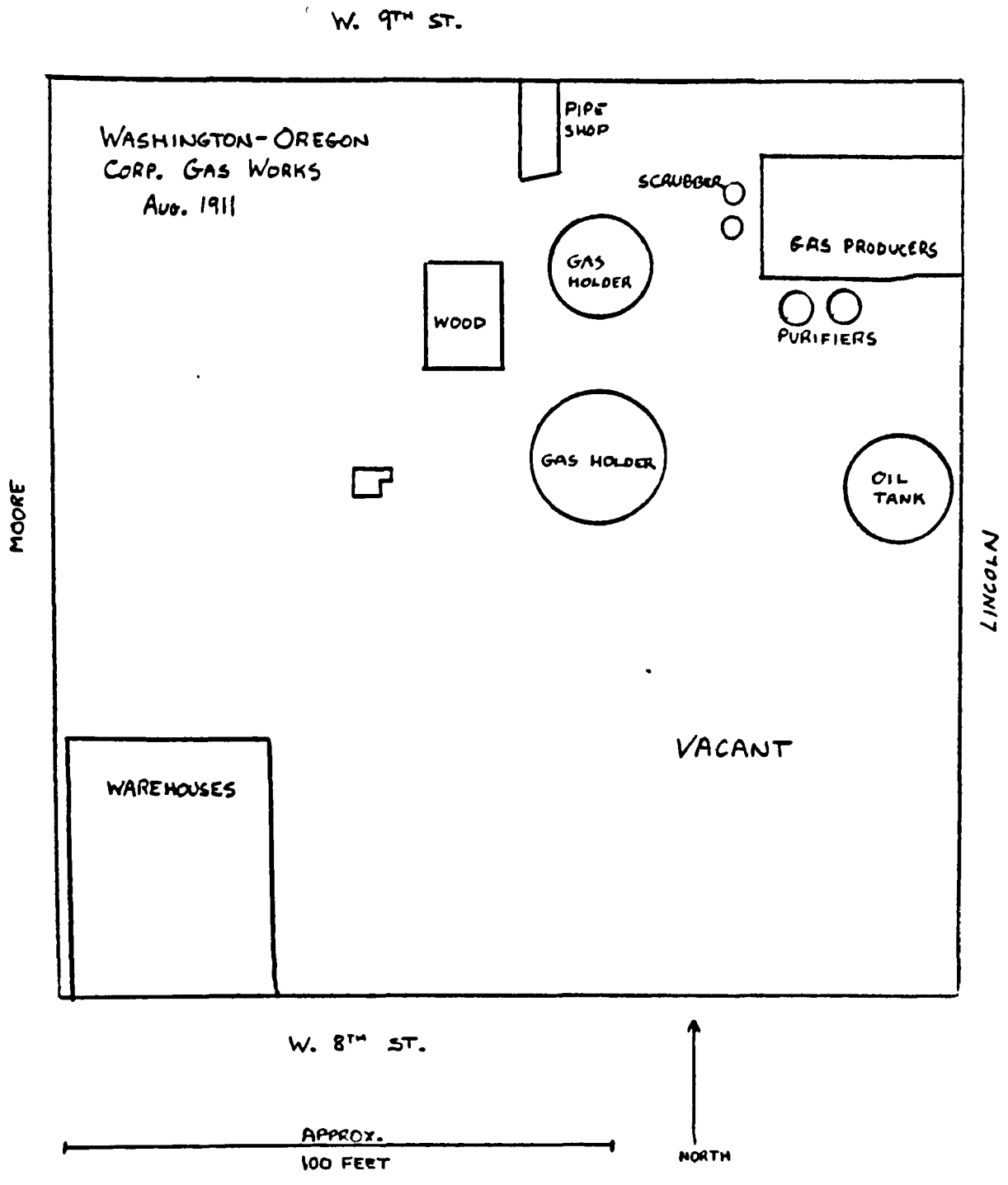

FIGURE C-31
WASHINGTON-OREGON CORP.
Vancouver, Washington
Sketch from Sanborn Fire Insurance Map, 1911

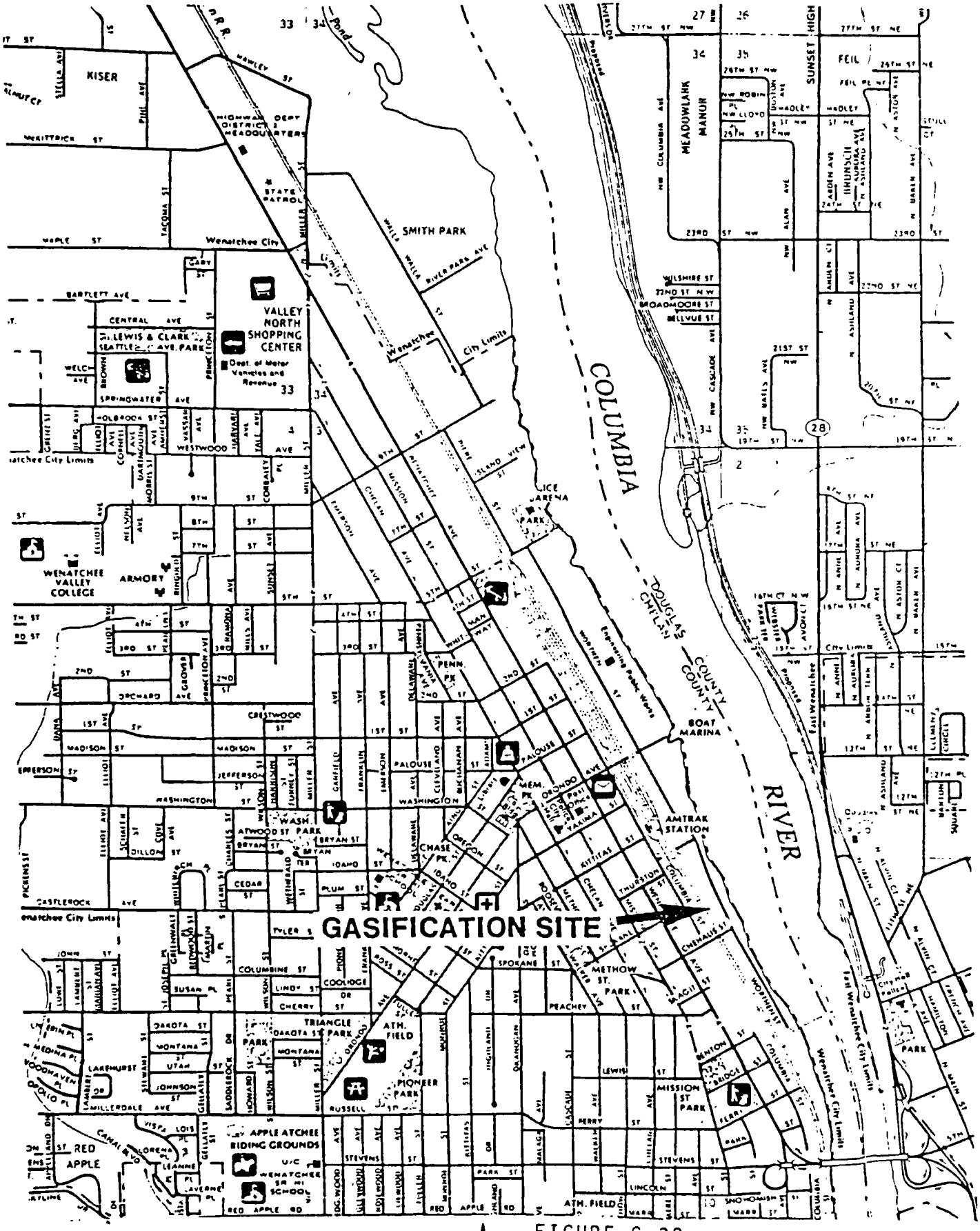

FIGURE C-32
WENATCHEE GAS MANUFACTURING SITE
Wenatchee, Washington
Scale: 1 3/4" = 3000 feet

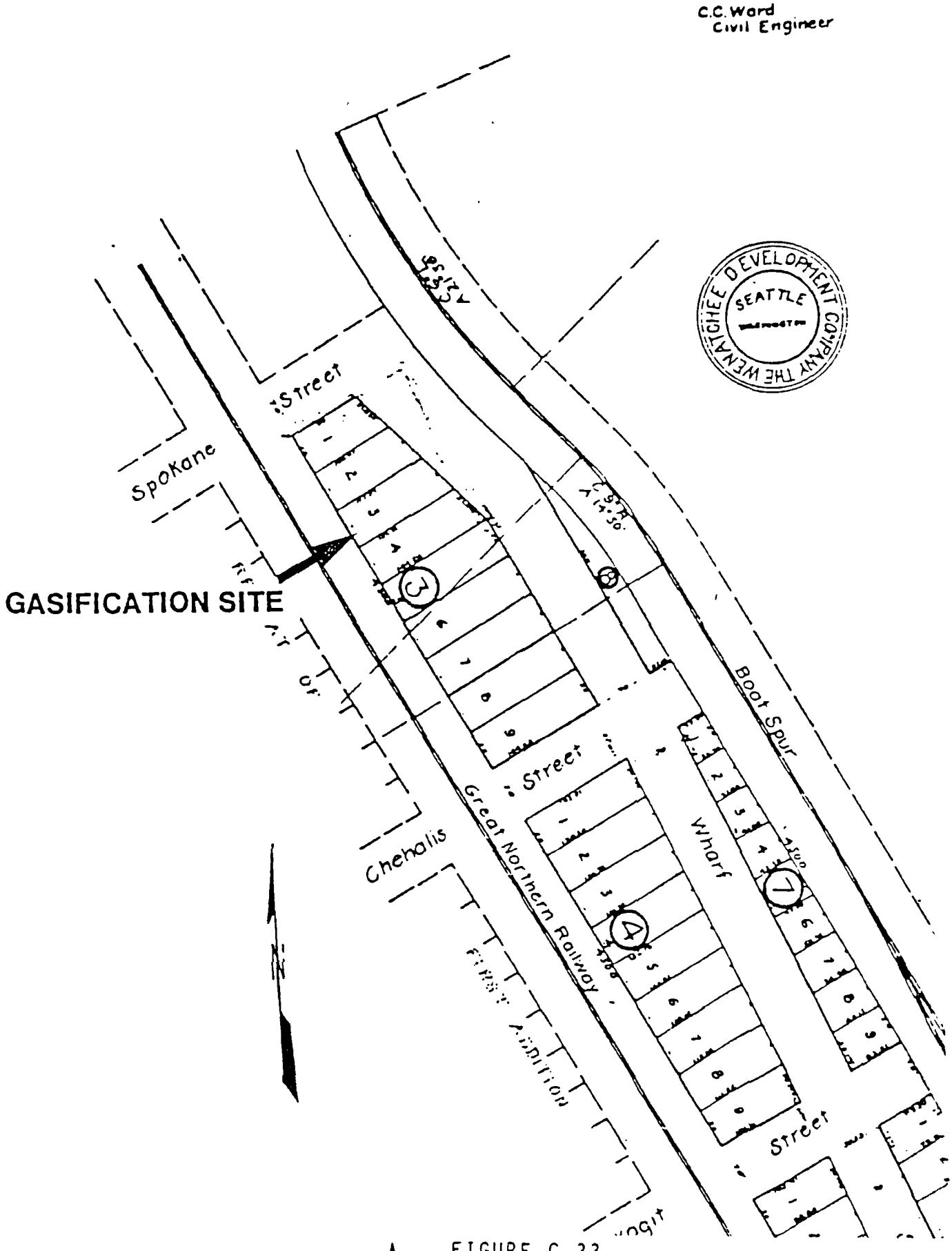

FIGURE C-33
MANUFACTURER'S ADDITION TO WENATCHEE
Wenatchee, Washington
Chelan County Plat Map
Scale Unknown

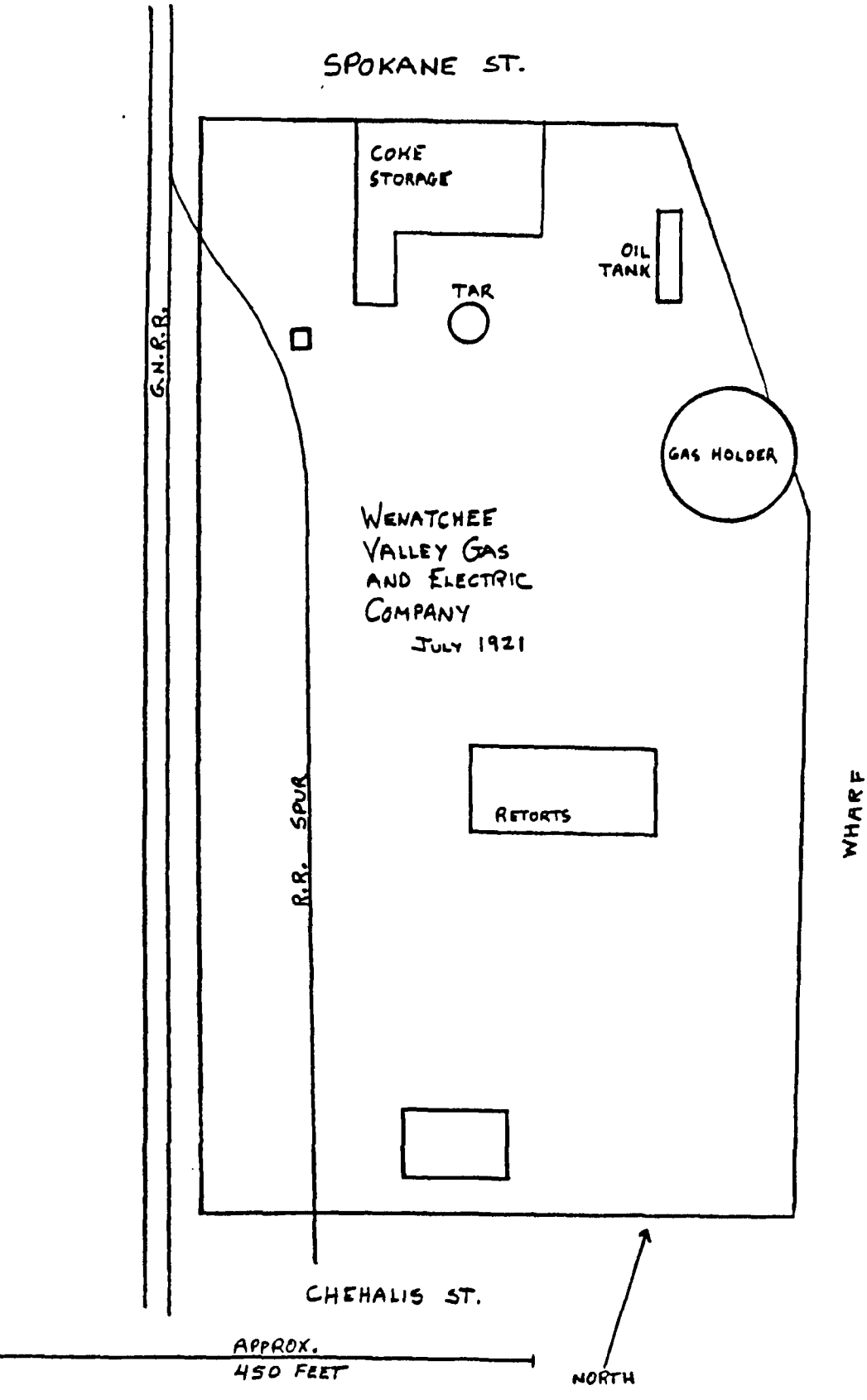

FIGURE C-34
WENATCHEE VALLEY GAS AND ELECTRIC CO.
Wenatchee, Washington
Sketch from Sanborn Fire Insurance Map, 1921

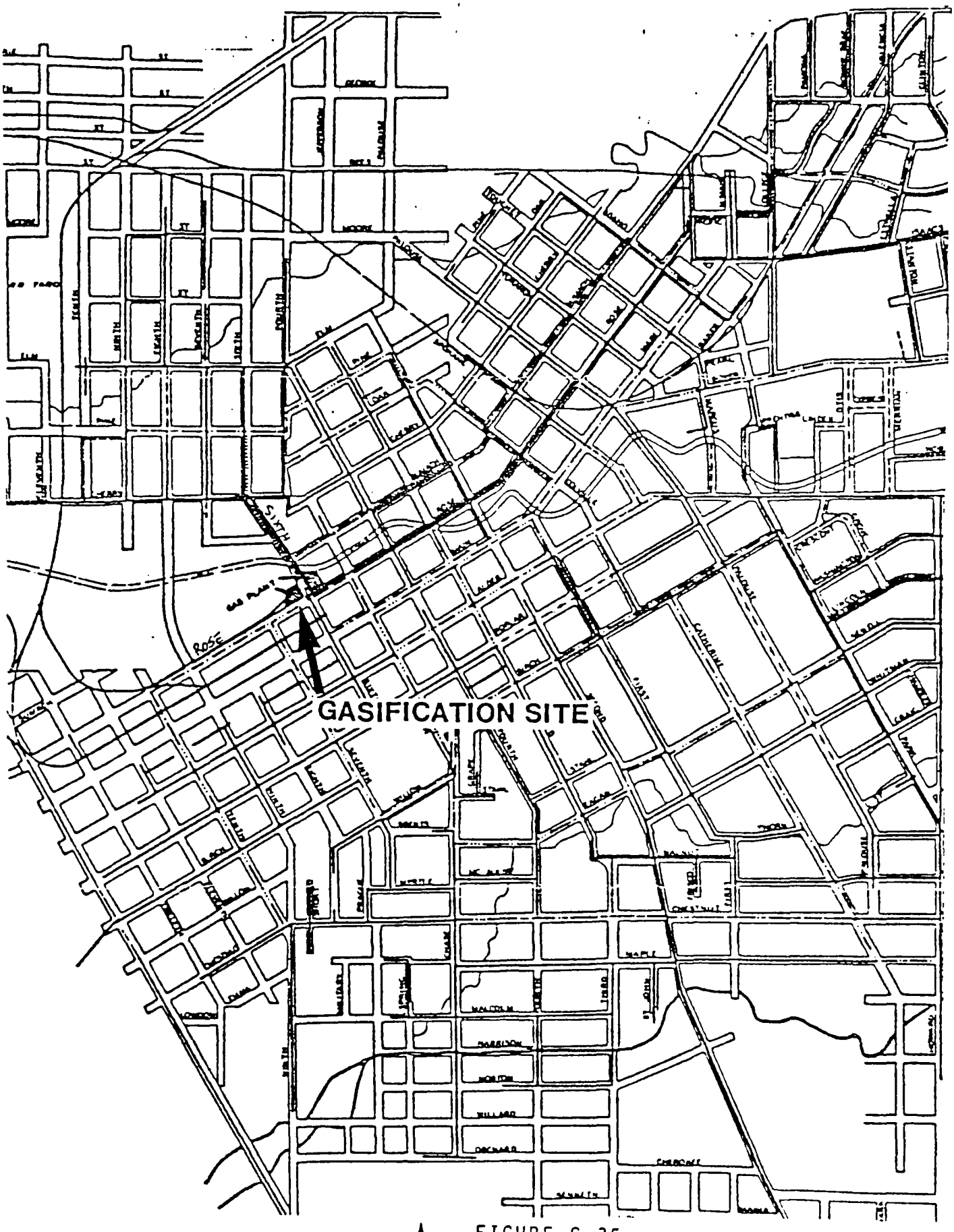

FIGURE C-35
NORTHWEST CITIES GAS COMPANY
Walla Walla, Washington
Gas Company Distribution Map, 1938
Scale Unknown

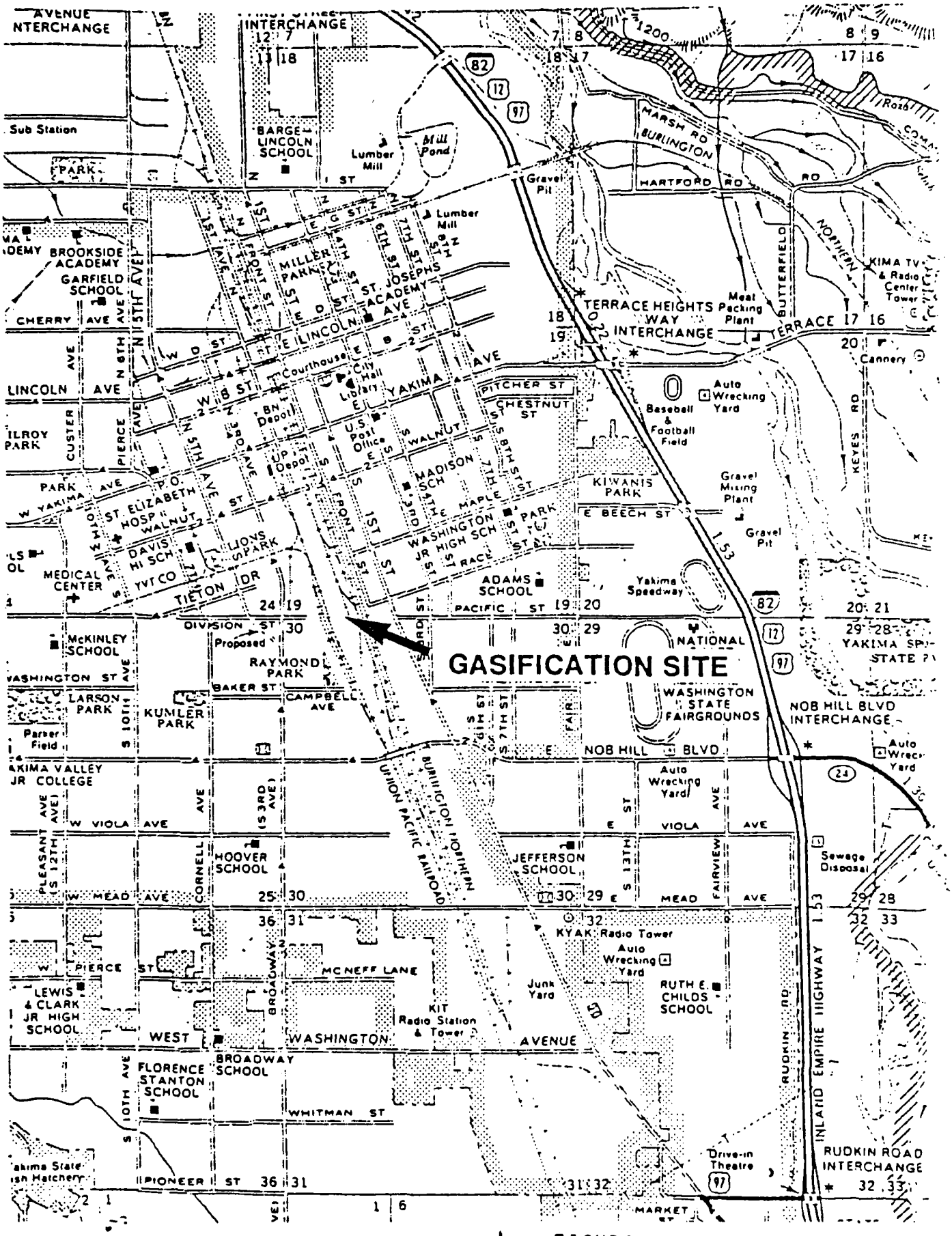

FIGURE C-36
YAKIMA GAS MANUFACTURING SITE
Yakima, Washington
Scale Unknown

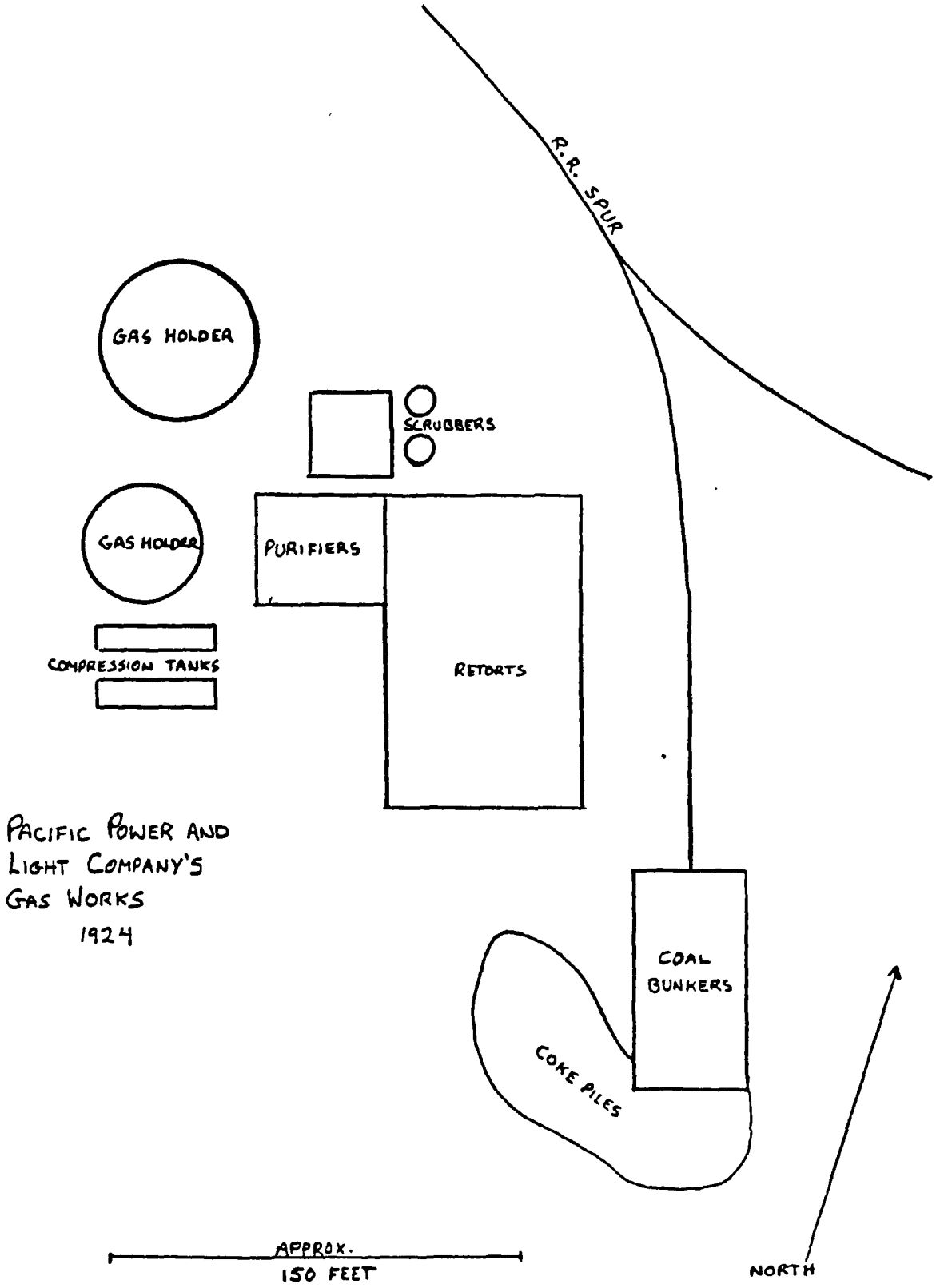

FIGURE C-37
PACIFIC POWER AND LIGHT CO.
Yakima, Washington
Sketch from Sanborn Fire Insurance Map, 1924

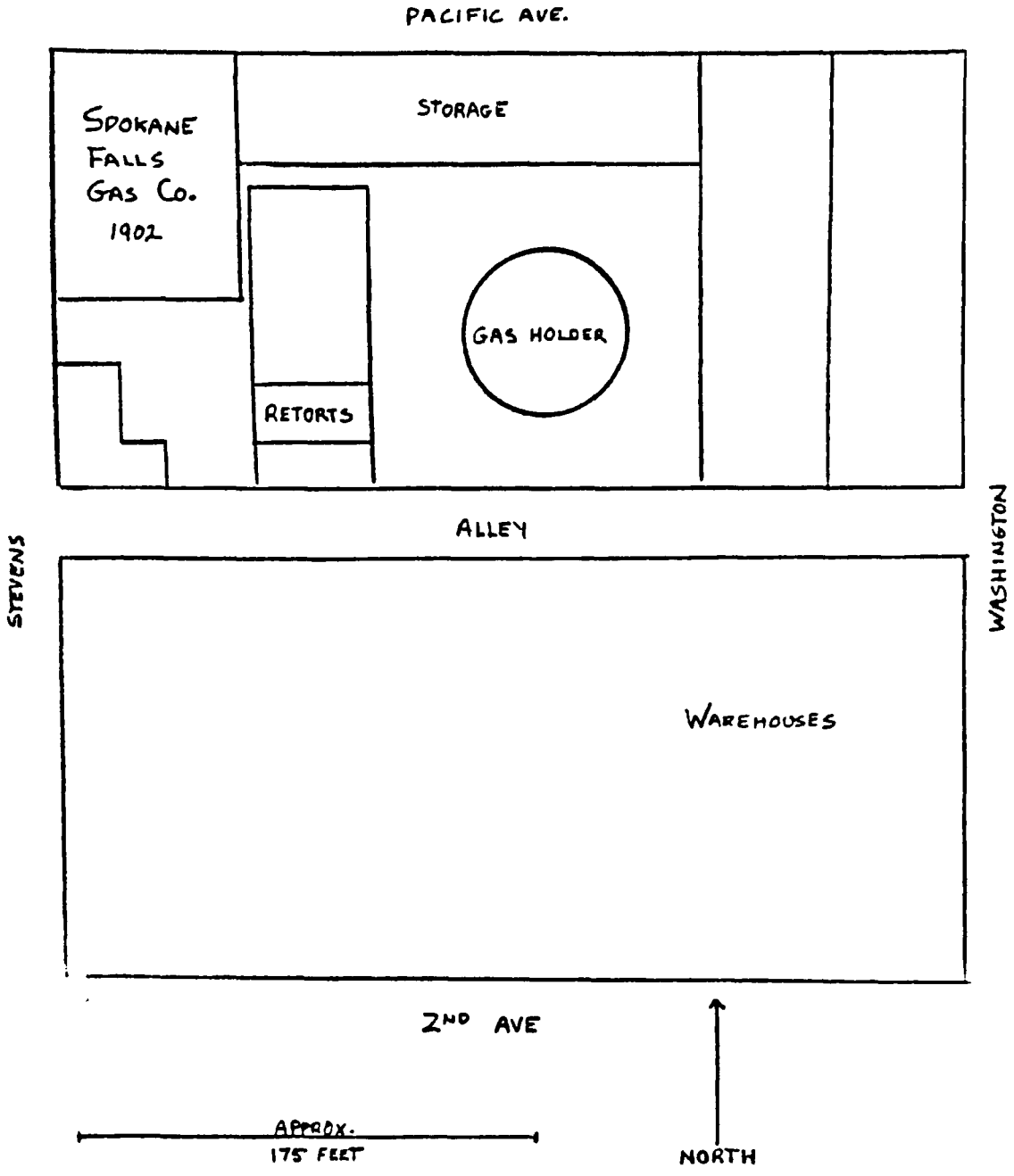

FIGURE C-38
SPOKANE FALLS GAS CO.
Spokane, Washington
Sketch from Sanborn Fire Insurance Map, 1902